NON-TARIFF MEASURES AND EXPORTS: THE MALAYSIAN CASE

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KUALA LUMPUR

2017

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THESIS SUBMITTED IN FULFILMENT OF THE REQUIREMENTS
FOR THE DEGREE OF DOCTOR OF PHILOSOPHY/ECONOMICS

FACULTY OF ECONOMICS AND ADMINISTRATION
UNIVERSITY OF MALAYA
KUALA LUMPUR

2017

UNIVERSITY OF MALAYA

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ABSTRACT

This study examines the effect of non-tariff measures (NTMs) on the Malaysian exporters. Motivated by the paucity of studies in this area, this study investigates the predicament of the exporters with regard to the main NTMs faced and whether the measures impede or enhance exports; and vary across markets. It examines the significance of stringency of NTMs, including specific measures, on export intensity. Demographic variables used are type, ownership, age, and size of firms. The study also investigated the response decisions (exit, loyalty or voice concerns in reactive or proactive manner) pursued by the Malaysian exporters when faced with NTMs, the NTM types experienced by exporters, and whether information asymmetry is significantly related to exports. Two analytical approaches were used namely, 1) gravity model for data extracted from the Trade Analysis and Information System (TRAINS) database for the 2001-2013 period, and 2) multinomial logistics regression on data obtained through a survey of 143 export firms between June 2014 and December 2014. The key findings reveal that tariffs and NTMs in importing countries exert opposite effects on Malaysian exports and greater NTM coverage of exports in the importing country promotes the Malaysian exports. Agricultural and industry products as well as their major export markets - ASEAN, EU, and Japan found NTMs had positive effects. Dual effects (impede and enhance) of NTMs were found in EU market. The key findings from the survey data inform firms that find NTMs as stringent are those: exporting less than 75 percent of goods; small and medium size compared to large firms; resource-based firms exporting less than 75 percent; exporting less than 75 percent to the US, EU and Japan. Similar findings were reached for stringency of technical measures (TM) and stringency of private measures (PM). Stringency of customs procedures (CP) experienced in the US, EU, Japan, and ASEAN. Other non-tariff measures (ONTMs) were found to be not stringent in most export

markets, except in Japan. Firms experienced information asymmetry for exports to the US and EU markets. Price effects, quantity reduction, and quality restrictions are experienced by the exporters in the US, EU and Japanese markets. Firms across all export levels (4 export levels- "25 percent and less", "26-50 percent", "51-75 percent" and "more than 75 percent") adopt loyalty response strategy in a reactive manner when faced with NTMs. Resource-based firms mostly pursue a loyalty-reactive strategy. Firms that export "25 percent and less" adopt the exit strategy when faced with NTMs more than firms in other export levels. Firms with less than 5 years in operation actively adopt all three response strategies in a reactive manner - "exit-reactive", "loyalty-reactive" and "voice-reactive". This study contributes to the existing empirical literature on NTM effects on trade from the perspective of a middle income and highly trade dependent economy. It also sheds light on the stringency of the impact of NTMs on exports from Malaysia.

ABSTRAK

Kajian ini mengkaji kesan langkah bukan-tarif (NTM) ke atas pengekspot-pengekspot Malaysia, didorong oleh jurang yang timbul daripada kekurangan kajian dalam bidang tersebut. Persoalan kajian yang disiasat, di antaranya adalah i) samada NTM menghalang atau meningkatkan eksport dan adakah ia berbeza di seluruh pasaran, ii) samada NTM yang dihadapi itu ketat bagi pengeksport Malaysia dari segi intensiti esport dan adakah ia berbeza dari segi produk dan pasaran, iii) samada NTM yang spesifik seperti langkah bukan-tarif teknikal (TM), prosedur kastam, NTM yang lain (ONTM) dan langkah-langkah swasta mempunyai hubungan penting ke atas eksport, iv) samada keketatan NTM ada hubungan penting dengan strategi tindakbalas (keluar, kesetiaan atau menyuara-dengan dimensi masa) diambil oleh para pengeksport Malaysia apabila menghadapi NTM, v) jenis NTM (kesan harga, pengurangan kuantiti, sekatan kualiti dan ancaman tindakbalas) yang dihadapi oleh para pengekspor dan vi) samada ketidaksimetrian maklumat mempuyai hubungan penting ke atas tahap eksport. Dua pendekatan metodologi digunakan iaitu model graviti dan regresi logistik multinomial untuk menganalisis data yang diekstrak daripada TRAINS (Trade Analysis Information System) untuk tempoh 2001-2013; dan data yang diperoleh daripada kajiselidik 143 firma-firma eksport masing masing. Didapati tarif dan NTM di negara pengimport memberi kesan sebaliknya kepada eksport Malaysia dan liputan NTM lebih besar daripada eksport di negara pengimport menggalakkan eksport Malaysia. Produk pertanian dan industri serta pasaran eksport utama seperti ASEAN, Kesatuan Eropah (EU) dan Jepun mendapati NTM memberi kesan positif. Dalam pasaran EU, kesan dwi (menghalang dan meningkatkan) daripada NTM diperhatikan. Didapati firma-firma yang eksport kurang daripada 75 peratus mendapti NTM adalah ketat. Firma bersaiz kecil dan sederhana berpendapat NTM adalah ketat. Firma berasaskan-sumber berbanding yang

eksport "25 peratus dan kurang" dan "51-75 peratus" mendapati NTM adalah ketat. Firma-firma yang mengeksport kurang daripda 75 peratus ke Amerika Syarikat, EU dan Jepun mendapati NTM adalah ketat. Kesimpulan yang sama adalah benar untuk keketatan langkah bukan-tarif teknikal (TM) dan keketatan langkah-langkah swasta (PM). Didapati prosedur kastam di pasaran Amerika Syarikat, EU, Jepun dan ASEAN adalah ketat. Kecuali di Jepun, ONTM didapati tidak ketat. Di dapati firma-firma mengalami kesan ketidaksemtrian maklumat untuk eksport mereka ke Amerika Syarikat dan pasaran EU. Para pengeksport mengalami kesan harga, pengurangan kuantiti dan sekatan kualiti berbanding dengan ancaman tindak balas dalam pasaran Amerika Syarikat, EU dan Jepun. Di dapati firma-firma keseluruhanya adalah setia secara reaktif apabila berhadapan dengan NTM sebagai strategi tindakbalas mereka. Strategi yang sama dilaksanakan oleh firma-firma berasaskan-sumber. Walau bagaimanapun, firma-firma yang mengeksport "25 peratus dan kurang" melaksanakan strategi keluar pabila berhadapan dengan NTM. Firma-firma yang kurang daripada 5 tahun beroperasi seolah-olah mengamalkan ketiga-tiga strategi tindak balas dengan cara reaktif secara aktif - "keluar-reaktif", "kesetiaan-reaktif" dan "suara-reaktif". Kajian ini menyumbang kepada teori dan empirik yang sedia ada dari segi kesan NTM ke atas eksport dari perspektif negara yang berpendapatan sederhana dan ekonominya yang bergantung tinggi kepada perdagangan anatarabangsa. Ia juga menyumbang dalam memberi maklumat tentang keketatan kesan NTM (mengikut jenis) ke atas eksport (mengikut sektor dan eksport destinasi) daripada Malaysia.

ACKNOWLEDGEMENTS

Throughout this arduous journey, the constant guidance and readiness to assist expressed by my learned supervisors, Assoc. Prof. Dr. Evelyn S. Devadason and Dr. Santha Chenayah, have been central to the completion of this thesis. Their knowledge and passion in their fields encouraged me to persevere the often tumultuous journey of a Ph.D. that addresses current realities. It has been a wonderful experience and to them I am indeed heavily indebted.

I would like to thank Assoc. Prof. Dr V.G.R. Chandran for his insightful comments that enriched my thesis. I would like to thank the staff of the Faculty of Economics and Administration, specifically Puan Azura and Encik Suihaidi for helping me in many administrative matters. I am grateful to Tan Sri Dr Rebecca Sta Maria, Secretary General of Ministry of Trade and Industries, for her insights on the export process in Malaysia. Her comments on the questionnaire were very useful.

Lastly, I would like to thank my family: wife, sons, parents, brothers, sisters and house assistant for the unwavering support given over the course of writing this thesis.

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LIST OF SYMBOLS AND ABBREVIATIONS

AFTA	:	ASEAN Free Trade Area
ASEAN	:	Association of Southeast Asian Nations
BRC	:	British Retail Consortium
CIES	:	Centre for International Economic Studies
CoC	:	cost of compliance
CP	:	customs procedures
CR	:	coverage ratio
DOSM	:	Department of Statistics Malaysia
ECR	:	export coverage ratio
E & E	:	electrical and electronics
EPU	:	Economic Planning Unit
EU	:	European Union
GATT	:	General Agreement on Tariff and Trade
GDP	:	gross domestic product
GFSI	:	Global Food Safety Initiative
GLOBALGAP	:	Global Partnership for Good Agriculture Practices
H-O	:	Hecksher-Ohlin
HS	:	harmonized system
IC	:	import coverage
IMS	:	Information Management System
ISO	:	International Organization for Standardization
ITC	:	International Trade Commission
LDC	:	least developed country
LNG	:	liquefied natural gas

MATRADE	:	Malaysian External Trade and Development Corporation
MJPA	:	Malaysia-Japan Partnership agreement
MITI	:	Ministry of International Trade and Industry
NGO	:	non-governmental organization
NTB	:	non-tariff barrier
NTM	:	non-tariff measure
OECD	:	Organization of Economic Co-operation and Development
ONTM	:	other non-tariff measure
PM	:	private measure
PSI	:	pre-shipment inspection
PTA	:	preferential trade agreement
RASFF	:	Rapid Alert System for Food and Feed
RoHS	:	Restrictions on Hazardous Substances
RoO	:	Rules of Origin
RTA	:	Regional Trade Agreement
SINDEX	:	stringency index
SIRIM	:	Standards and Industrial Research Institute of Malaysia
SME	:	small and medium enterprise
SPS	:	sanitary and phytosanitary
SPSQ	:	sanitary, phytosanitary and quality
TBT	:	technical barrier to trade
TM	:	technical measure
TRAINS	:	Trade and Information Analysis System
TRQ	:	tariff rate quotas
UNCOMTRADE	:	United Nations Commodity Trade
UNIDO	:	United Nations Industrial Development Organization

UNCTAD	:	United Nations Conference for Trade and Development
US	:	United States
USITC	:	United States International Trade Commission
VPA	:	Voluntary Partnership Agreement
WITS	:	World Integrated Trade Solution
WTO	:	World Trade Organization

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CHAPTER 1 : INTRODUCTION

1.1 INTRODUCTION

Malaysia is increasingly integrating with the world through international trade. For instance, the total export value in 2015 amounted to RM779.9 billion (MITI, 2015), this comprises of 71 percent of its total GDP (constant price) for 2015 (The GlobalEconomy.com, 2016). The country's growth in international trade may be affected by non-tariff measures (NTMs), which is on the rise globally and trade-restricting (Deardorff and Stern, 1998; Beghin et al., 2012; Mohan et al., 2012). Notwithstanding the intent to protect domestic industries or to address market failures on legitimate reasons, NTMs can distort and restrict international trade (UNCTAD, 2013). The proliferation of NTMs affecting international trade is becoming a major concern for exporters from developing countries because of the requirement to comply with various NTMs in order to access markets (UNCTAD, 2013). Fugazza and Maur (2008) reported that approximately 5,620 tariff lines of most countries are subject to at least one type of NTM, with technical measures (TM) of NTM constituting close to 59 percent. The World Trade Organisation (WTO, 2012) reported that as high as 31,731 NTMs were imposed.

Studies reporting the predicament of Malaysian exporters with regards to NTMs are scarce. Only three studies have been conducted thus far on Malaysian exporters with regard to NTMs. Azalina et al. (2011) studied the determinants of non-tariff barriers (as per the title) in Malaysia's agricultural sector. The study found average tariffs, sectoral competitiveness level and employment growth to be significant determinants of NTM. The study did not specifically involve the Malaysian exporters, rather a concern to exporters from other countries entering the Malaysian market. Normaz (2010) studied the effects of language on trade for Malaysia. Again, it is only one area focused. The study concluded that trade is improved when trade partners share a common language. Rabiul

et al. (2010) investigated the impact of trade barriers on the timber trade in Malaysia. It concluded that trade barriers generally do not pose a serious problem to Malaysia's timber trade. This study lacks crucial information, as it looked at only the perspective of issues of trade barriers in Malaysia. This is of relevance only to exporters from other countries dealing with Malaysia in timber trade. Based on these studies, it can be noted that examining the impacts of NTMs on Malaysian exporters is scarce.

1.2 PROBLEM STATEMENT

The presence of NTMs is real and has the potential to distort and restrict trade. Understanding NTMs and its implication on exports is important to effectively formulate trade policies and implement market access strategies. This is important for exporters, especially from developing countries, as they are the ones facing increasing export costs by complying to NTMs, and therefore may likely become unable to compete in the export market. UNCTAD (2013) found that exporters from developing countries may be subject to systematically biased NTMs. This provides a good reason for developing countries to emphasise the effect of NTMs and formulate plans to effectively address these concerns. Appropriate policies cannot be formulated without understanding the impact of NTMs. Hence, NTMs are now regarded an important agenda for developing countries in their effort to trade globally.

As Malaysia's trade sector places a high emphasis on exports, there are concerns with accessing current and potential international markets. Between 2013-2014, key products exported were electrical and electronic products (33 percent), petroleum products (9.3 percent), liquefied natural gas (LNG) products (8.35 percent) and chemical products (6.5 percent). These products combined, added up to nearly 60 percent of the total products exported in 2013-3014. In 2014, exports achieved totalled RM766.13 billion surpassed total exports in 2013 by 6.4 percent (MITI Malaysia Report 2014). The

report also showed that Malaysia's major trading partners in 2014 remained unchanged; with the largest, China, accounting for 14.3 per cent or RM207.85 billion of Malaysia's total trade. This was followed by Singapore at 13.4 percent which is RM194.52 billion, Japan at 9.5 per cent or RM137.45 billion), the US at 8.1 per cent which equates to RM116.75 billion and lastly, Thailand at 5.5 per cent which translates to RM79.92 billion. ASEAN remained an important and strategic trading partner for Malaysia, accounting for 26.9 per cent-of Malaysia's total trade in 2014 and 27.4 percent in 2013. Total trade with ASEAN was valued at RM389.03 billion; an increase of 3.9 percent from RM374.49 billion in 2013. In 2015, exports grew by 1.9 per cent to reach a value of RM779.95 billion. A large portion of this came from trade with major export markets, for example, The People's Republic of China (PRC) which increased trade by RM23.09 billion, ASEAN (RM12.29 billion), the United States of America (US) (RM12.22 billion), the European Union (EU) (RM4.52 billion) and Turkey (RM2.48 billion). In 2015, Malaysia retained its global ranking as the world's 23rd largest exporter (MITI Malaysia Report 2015).

However, total elimination of NTMs may not happen soon as countries would be maintaining a set of NTMs for economic and social reasons. Hence, Malaysian exporters need to wary and meet the NTMs' requirements, which may pose at times a significant increase in costs. Therefore, this study on NTMs provides an important perspective in understanding the predicament and readiness of the Malaysian exporters to be competitive in the export markets. Research on the impact of NTMs on exports has produced ambiguous results. Many studies have shown the negative effects of NTMs on exports. Moenius (2004) studied the impact of national standards of twelve OECD countries' exports and found it to have negative effects on exports of food and beverages, crude materials and mineral fuel. Fontagne et al. (2005) derived similar results for sixty-one product groups. Others that found similar impacts include Peterson et al. (2013), Minten,

Randrianarison and Swinnen (2009), Anders and Caswell (2009), Calvin, Krissoff and Foster (2008), Otsuki et al.(2001), Disdier and van Tongeren (2010), Peterson and Orden (2008), Maskus, Wilson, and Otsuki (2001) and Chen et al.(2008).

However, studies also found that there are trade enhancing effects of NTMs through harmonization of standards (Moenius, 2004; Fontagné et al., 2005; de Frahan and Vancauteren, 2006 and Disdier et al., 2008). The harmonization of standards enables exporters to experience lower costs of exports as they minimize or avoid costs by complying to differing standards imposed by importing countries. By complying with the set regulations and requirements, it enables exporters to be in the position to increase exports and be competitive in the importing market. An increase in the demand for their products will result in exporters achieving economies of scales. In summary, the impact that NTMs will have on exports largely remains inconclusive. Henceforth, this study on NTMs' effects on Malaysia's exports is important in further contributing to the argument on the effects of NTMs. Existing secondary data on NTMs does not provide any indication of the stringency of NTMs across sectors and in major export destinations. Many previous studies used the trade restrictiveness index to gauge the effect of NTMs. Existing empirical studies on NTMs in Malaysia are either confined to the measurement of simple average ad valorem equivalents of core NTMs (Kee et al., 2009) to quantify the effects of NTMs on export behaviour or case studies to identify specific sectoral NTMs within Malaysia and partner countries (Azalina and Rokiah, 2011; Rabiul et al., 2010 and Noor Aini 2011). These studies do not indicate the stringency of NTMs imposed in the export markets, especially in developed countries, as the stringency of NTMs may vary across markets. The survey approach can be used to show specific stringency of NTMs faced by exporters (OECD, 2003; World Bank, 2008), which this study aims to accomplish.

Dearth of research on NTMs' impacts on trade, particularly its stringency on exports is evident, particularly in Malaysian case studies. Azlina et al. (2011), Normaz (2010) and Rabiul et al. (2010) studied the determinants of NTMs and the effects of language on trade and barriers pertaining to the timber trade in Malaysia. Appropriate policies cannot be implemented without understanding the impact of NTMs on Malaysian exporters, more so in the wake of current efforts to expand trade to new international markets. Given the weight of the above discussion on NTMs, especially its stringency on exports from Malaysia, this study is important as it looks at making a significant contribution to the body of knowledge in international economics.

1.3 RESEARCH QUESTIONS AND RESEARCH OBJECTIVES

This research determines the impact of NTMs on exports from Malaysia to her destination countries. As established earlier, rarely can there be found studies on the impact of NTMs on Malaysian exporters. As such, this study enriches this field of study by exploring the impact of NTMs through two research approaches – the gravity model and survey. First, the gravity model approach was employed to determine the effects of NTMs on market accessibility of Malaysian exporters to the European Union, Japan and the four Association of South East Asian (ASEAN 4) countries. The ASEAN 4 refers to Singapore, Thailand, Philippines and Indonesia.

The gravity model uses the data extracted from secondary database, TRAINS (Trade Analysis and Information System) on trade flow from Malaysia. In this approach, the overall impact of NTMs on exports from Malaysia and the NTMs impact by sector (industry and agricultural) are studied. The second approach which is survey uses the data obtained from 143 export firms through a survey instrument. Though the purpose is similar to the first approach, the outcome variable in the survey based approach is more specific in determining the stringency of NTMs' impact on export intensity. It is

important to note that such a specific impact study is only possible through the survey based approach. Apart from this, the analysis (using the survey data) incorporates views gathered from in-depth interviews with selected firms to gain detailed information about their experience facing NTMs. Following are the research questions in this study.

i. Do NTMs impede or enchance exports from Malaysia?

ii. How stringent are NTMs and TMs relative to other measures for Malaysian exporters by export intensity and export destinations?

iii. What are the NTM effects (price effects, quantity reduction, quality restrictions, and threat of retaliation decision) on Malaysian exporters?

iv. How have NTMs affected the response strategies (exit, loyal or express concern (voice) of Malaysian exporters?

The above research questions are subsequently addressed with the following research objectives.

i. To empirically examine the overall effects of NTMs on Malaysian exports.

ii. To empirically examine the stringency of NTMs and TMs on exports by export intensity and export destinations.

iii. To determine the NTM types (price effects, quantity reduction, quality restrictions, and threat of retaliation) faced by Malaysian exporters.

iv. To assess the response strategies of Malaysian exporters in facing NTMs.

1.4 STUDY SIGNIFICANCE

This study is significant as NTMs play a critical role in international trade. The successive General Agreement on Tariffs and Trade (GATT) rounds of multilateral trade negotiations have substantially reduced tariffs with the expectation that it will boost exports (UNCTAD, 2013). However, export markets have been adopting NTMs as a substitute to tariff reduction for various reasons, including as a protectionist measure.

Inadvertently, the NTMs tend to bear a burden on exports especially from developing countries. The presence of NTMs, be it as a policy instrument or otherwise, pose impediment to a more free trade zone, thus denying countries, especially the developing countries from realising potential gains from free trade. According to World Trade Organization (WTO, 2014) (The News Straits Times, June 2015), the elimination of NTMs can see global trade increase up to US$1 trillion (RM3.65 trillion) per year which is able to create 21 million jobs worldwide.

How this claim would apply to a country like Malaysia which is already well integrated in the world trade, is unknown. Adriamananjara et al. (2004) argued that the removal of certain measures can lead to global welfare gain of about US$90 billion in 2001. Trade facilitation improves when NTMs are removed, thus according to Wilson et al. (2005), the global merchandise in developing countries could increase by US$377 billion between 2000-2001.

Fugazza and Maur (2008) found that 14 out 26 regions have been impacted with higher ad valorem tariff equivalent to NTMs than the average tariff. The impact of sanitary and phytosanitary (SPS) measures, which is classified as NTM, on US beef exports from 2004-2007 was US$11 billion, estimated to be almost twice than the impact of tariffs and tariff rate quotas which is US$6.3 billion (USITC, 2008). This study therefore contributes to the NTMs' effects on Malaysian exports.

Research on the impacts of NTMs on trade exports have produced ambiguous results and studies involving Malaysian exporters are little known. Very few studies focused on Malaysia, particularly at the firm level. Existing studies are focused on country level rather than firm level (Saini, 2011). Most studies use secondary data and therefore suffer from secondary data problems.

Kee et al., (2006) focused on the import side of Malaysia. Based on the simple average ad valorem equivalents of core NTMs, Malaysia was found to have relatively high levels of NTMs besides Mexico, Brazil, and Uruguay. Azalina (2010) studied the impact of NTMs for Malaysian imports. Other studies undertaken are on the effect of language on trade (Normaz, 2010) and the impact of NTMs on trade barriers to the timber trade in Malaysia (Rabiul et al., 2010). Azalina et al. (2011) studied the determinants of NTMs in Malaysia's manufacturing sector. The above studies did not focus on the impact of NTMs on Malaysian exports, thereby highlighting the significance of this research's undertaking.

1.5 STUDY CONTRIBUTION

This study focuses on the effect of NTMs on exports of firms in a developing country using primary and secondary data. This contrasts with many studies that look at developed countries. Malaysia being a highly trade dependent, non-agriculture based economy with high export concentrations in terms of both products and markets, would find findings of this study strongly relevant. To date, the predicament of Malaysian exporters in facing and managing NTMs is unknown or yet to be documented. This study's findings would strengthen current policy debate on market accessibility of traditional markets which has already emerged as a critical item on the national agenda and for policy considerations in negotiating comprehensive bilateral free trade agreements (FTAs) with major partner countries.

The resumption of Malaysia-European Union Free Trade Area (MEUFTA) negotiations would place Malaysia in a better position to put forth the challenges faced by its exporters in EU with regards to NTMs, specifically Sanitary and Phytosanitary (SPS) and Technical Barriers to Trade (TBT) measures imposed on palm oil and timber exports. This study provides micro-level evidence, based on a firm-level survey, specially constructed to identify the stringency of NTMs in major export markets from the Malaysian perspective, which has the advantage of drawing on experiences of economic agents that are directly involved in the exporting activities. Information on the stringency of specific NTMs, stringency of NTMs by export destinations and the category of Malaysian exporters that it should be directed to, will provide policy making directions for the government to devise specific strategies or incentives targeting the affected exporters, and also guide trade negotiators to streamline specific NTMs through trade agreements to ensure that they facilitate trade in the interest of the exporters.

1.6 SCOPE OF STUDY

This study only involves export firms in Malaysia. The secondary data from TRAINS, survey, and interview are the approaches used to obtain data about the export firms and the NTMs they face. In terms of geographical scope, the study focuses on Malaysian exporters. Using secondary data from the TRAINS database, the export destination countries are limited to EU, Japan and the ASEAN 4. The export destinations in the survey are limited to the US, EU, Japan, China and ASEAN. The NTMs are derived from the UNCTAD's 2012 classification version (UNCTAD, 2013). Some non-UNCTAD classified measures are included i.e. other non-tariff measures (ONTMs), private measures (PMs) and information asymmetry (InfoAsym). Additionally, the NTM types- price effects, quantity reduction, quality restrictions and threat of retaliation were

also studied. Analysis of the the non-UNCTAD classified measures are important as they are significant to exporters.

1.7 ORGANISATION OF CHAPTERS

This thesis is organised into eight chapters. Chapter 1 comprises of an introduction to the research, the significance of the study, problem statements, research questions and research objectives, study contributions as well as scope and limitations of the study.

Chapter 2 reviews existing literature on NTMs. It provides an in-depth discussion on NTMs, comprising of definitions, the classification of NTMs according to UNCTAD, trade theories, methods of measuring NTMs, specific NTMs, discussion on signalling theory, NTMs faced by developing countries and a brief explanation of RCEP.

Chapter 3 explains the conceptual framework for this study. It includes a discussion on the empirical method of the gravity model. It further describes the survey based approach structure, questionnaire design, data collection, and the multinomial logistics empirical estimation. Details on the stringency index calculation and interviews are provided as well.

Chapter 4 is the profile chapter and discusses the market accessibility of Malaysian exporters to major export destinations. An explanation of the gravity model used to analyse the effects of NTMs on exports using data from TRAINS is given. The findings and discussion of NTM coverage in the export destination are reported in this section.

Chapter 5 provides the descriptive information and analysis of 143 firms surveyed. Among the key topics included are the demographic profiles of the exporters, NTM incidences, and the NTMs faced by type of firms, size of firms and firm export levels.

Chapter 6 presents the findings from the survey of firms on the effects of NTMs on Malaysian exporters. The multinomial logistics regressions (MNL) results on the stringency of NTMs and specific NTMs which include customes procedures (CPs), ONTMs and PMs are discussed. This chapter also presents and discusses the findings on the effect of InfoAsym on export levels and the stringency NTM types - price effects, quantity reduction, quality restrictions and threat of retaliation faced by exporters. The results from the multinomial logistics regressions are also interpreted and discussed further.

Chapter 7 explores the various response strategies pursued by Malaysian exporters when faced with NTMs. A framework is given to determine the response strategies –exit, loyal, or voice. This chapter discusses findings on the response strategies pursued by firm type, export level, firm ownership and firm age.

Chapter 8 focuses on the conclusion, recommendations, policy implications and possible areas for future research. Based on the findings, the conclusions are validated against existing theories. Following this, some recommendations are suggested for the readers and other beneficiaries.

CHAPTER 2 : LITERATURE REVIEW

2.1 INTRODUCTION

Numerous studies have been done on the effects of NTMs on exports. This chapter starts with the various definitions of NTMs that have been given by several authors. Framework that classifies NTMs by UNCTAD (2013) is discussed. As NTMs are implicated in trade, it is relevant to explain the theories for international trade. The chapter proceeds with the reasons and impact of NTMs on trade as contributed by past studies. The chapter further presents the methods used to measure NTMs. It includes the inventory approach using frequency index, gravity model and survey approach. The survey approach discussion uses the method of measuring stringency of NTMs as given by Melo et al. (2014) whereas the Multinomial Logistic Regression (MNLR) approach is used in analysing survey data.

In a subsection, issues related to developing countries' exports with regards to NTMs is discussed. It shows the predicament of exporters from developing countries due to the imposition of NTMs by the importing countries, especially the developed countries. It is significantly relevant as Malaysia is a developing country implicated in this study. In this section, an explanation of the firm level studies implicating Malaysia with regards to NTMs is also provided. The chapter concludes with the discussion of response strategies pursed by exporters when faced with NTMs. On this, studies by Hirschman (1970) and Henson and Jaffee (2008) are presented. The significance of this is that it includes discussion of the classic framework on response strategies by Hirschman (1970) and the modified version by Henson and Jaffee (2008), which this study adopts.

2.2 DEFINITION AND CLASSIFICATION OF NTMs

Gourdon and Nicita (2012) defined NTMs from the perspective of costs which are policy related costs incurred from production to final consumer, excluding tariffs. MAST (2008) defined NTMs as policy measures other than customs tariffs, that can give rise to economic effect on the quantity and price of goods or both in international trade. Beghin et al. (2012) defined NTMs as regulated action that indirectly affects the quantity and prices or both, of goods traded by altering the attributes and perception of customers. Generally, the NTMs which can be country specific or harmonised are defined as policy measures (private and government), other than normal customs tariffs, that can potentially have an economic effect on international trade in terms of goods, quantities traded and/or prices (Carrere and de Melo, 2011 and Rytkonen, 2003).

NTMs as defined by Linkins and Arche (2002) is, "any measure other than a tariff that distorts trade". Baldwin (1970) defined NTM as, "any measure (public or private) that causes internationally traded goods and services or resources developed to the production of these goods and services, to be allocated in such a way as to reduce potential real world income". Mahe (1997) defined NTMs broadly to include:

- Technical Barrier to Trade (TBT)
- Sanitary and Phytosanitary Measures (SPS)
- Transport and infrastructure and costs
- Telecommunications, comprising telephone, fax, and internet connections
- Private product standards
- Technical handling and red tape

Bora et al., (2002) defined NTMs as that which include export restraints and production and export subsidies or measures with similar effect, not just restraints. This definition is widely used by GATT and UNCTAD. Baldwin (1970) defined NTMs as any measure

(public or private) that causes internationally traded good and services or resources to be allocated in such a way as to reduce potential real income.

Movchan and Eremeko (2003) reviewed the definitions of Baldwin (1970), Walter (1972), Mayer and Gevel (1973) and Deardorff and Stern (1997) and defined their version on NTMs as measures other than tariffs, that are tightly connected with state (administrative) activity and influence process, quantity, structure and/or direction of international flows of goods and services as well as resources used to produce these goods and services. Hillman (1991) gave a simplistic definition of NTMs which is all restrictions, other than traditional custom duties, which distort trade. The Organisation for Economic Cooperation and Development's (OECD) (2005) definition is almost the same as Hillman's which is any measure other than tariff that distorts trade. De Andrade (2009) defined NTMs as steps related to technical regulations, norms (sanitary or otherwise), and procedures to assess conformity, likely to create obstacles to trade. Walter (1972) defined NTMs as any measure that distorts the volume of trade, the composition of the basket of goods traded between countries, or the direction in which goods are trade. For practical purpose, the commonly used definition of NTM is UNCTAD's (2010) which defined NTMs "as policy measures, other than ordinary custom tariffs, that can potentially have an economic effect on international trade in goods, changing quantities traded, or prices or both."

NTMs are often cited as NTB. Both terms are commonly used to denote measures adopted by importing countries other than tariffs. However, the distinction is quite important to understand their impact. Generally, a NTM either has a positive, negative, or no effect on trade. Some of the positive aspects of NTMs' impact on trade are promoting trade, improvement in product quality standards and reduction in compliance costs amongst others. It can be imposed based on legitimate reasons i.e. to protect human, animal, and plant. On the other hand, when the term NTB is used, it mostly implies a

negative effect on trade. It means that the measure acts as a barrier to restrict trade through the means of compliance costs, product standards requirements, and other similar requisites imposed by importing countries. For example, the European Union is known for its very high tolerance limits set for residues or contamination by certain substances in foods and feeds. Similar perception was noted for Israel and Switzerland, where very high standards were imposed for imports of sesame seeds. In this study, the term 'NTM' instead of 'NTB" is used to denote non-tariff measures or barriers.

Given the importance of understanding the various kinds of NTMs, a global NTM classification system was developed. De Dios (2004) presented the UNCTAD classification of seven types of NTMs which are: i) para-tariff measures ii) price control measures iii) finance measures iv) automatic licensing measures v) quantity control measures vi) monopolistic measures and vii) technical measures. In connection to efforts to eliminate NTMs, De Dios (2007) noted that NTMs categorised in the red box require immediate elimination. These NTMs are non-transparent, discriminatory in application and have less restrictive alternative measures. The NTMs categorised in the amber box require negotiation with the member or members concerned (countries that impose these type of NTMs) before deciding on their elimination. NTMs in this category are transparent but discriminatory in application which nullify or impair some benefits or obligations of the country, that affect highly traded products in the region or under the nine priority sectors that cannot be clearly justified or identified as a barrier. NTMs categorised in the green box are imposed on legitimate grounds including scientific basis, for protection of public health and safety or religious or national security reasons that are consistent with WTO requirements and regulations. The sanitary, phytosanitary, and environment regulations that fall into this category are justified and could be maintained.

In 2008, a comprehensive classification was provided based on the UNCTAD Coding System and was developed by several international organizations forming what

was called the MAST group (Multi Agency Support Team) (UNCTAD, 2015). According to UNCTAD, the classification is based on the existence of NTM. It did not take into consideration the legitimacy, adequacy, necessity or discrimination of any form of policy or measure used in international trade. It is deemed necessary for i) documentation of the NTMs that companies are required to comply ii) facilitation of harmonization of the NTMs across different sectors and countries and iii) statistical analysis and research. The classification of NTMs helps in the collection and dissemination of information on NTMs applied by individual countries. The MAST consists of Food and Agriculture Organization (FAO) of the United Nations, International Monetary Fund (IMF), International Trade Centre (ITC), Organization for Economic Cooperation and Development (OECD), United Nations Conference on Trade and Development (UNCTAD), United Nations Industrial Development Organization (UNIDO), World Bank and World Trade Organization (WTO).

The latest revision of the NTM classification as reported by UNCTAD (2015) was in 2012 which comprises 16 chapters. Chapters A (Sanitary and phytosanitary measures (SPS), B (Technical Barriers to Trade (TBT) and C (Pre-shipment inspection and other formalities) refer to technical measures. The objectives of technical measures are to ensure quality and food safety, environmental protection and national security and protect animal and plant health. These objectives also act as mandatory requirement for quality, quantity and price control of goods prior to shipment from the exporting country. Chapter D refers to contingent trade protective measures. The objective of this measure is to ensure that unfair or adverse trade practices are not introduced by exporters in the importing countries. It includes anti-dumping, countervailing and safeguard measures. Chapter E refers to non-automatic licensing, quotas, prohibitions and quantity-control measures other than for SPS or TBT reasons. These measures are implemented to restrain the quantity of goods that can be imported, regardless of whether they come from different

sources or from one specific supplier. Chapter F deals with measures related to price control including additional taxes and charges. These measures are implemented to control the prices of certain imported goods which may be lower than the domestic price.

Financial measures including advance payment requirements and regulations governing foreign exchange rates are aimed to regulate the access to and cost of foreign exchange for imports and define the terms of payment. Chapter H refers to measures affecting competition. These measure include mainly monopolistic measures such as State trading, sole importing agencies or the use of mandatory national insurance or transport. Trade-related investment measures are included in Chapter I. These are measures that restrict investment by requiring local content or requesting that investment be related to export in order to balance imports. Chapter J refers to distribution restriction measures where it relates to internal distribution of importing goods. Chapter K refers to measures restricting post-sales services by exporters. These measures include restrictions on the provision of accessory services. Chapter L contains measures that relate to the subsidies that affect trade. These measures may include financial contribution such as grants, loans and equity infusions by a government or government body to an industry or a company to fund income or price support. Government procurement restrictions measures are dealt with in Chapter M. These measure are implemented to protect domestic businesses by imposing restrictions on government agencies to place preference on national providers (businesses) as compared to foreign bidders in the procurement of goods.

Chapter N deals with intellectual property measures and intellectual property rights in trade. It covers measures such as patents, trademarks, industrial designs, lay-out designs of integrated circuits, copyright, geographical indications and trade secrets. Chapter O is about rules of origin that restrict the origin of products or its inputs. These measures include laws, regulations and administrative determinations of general

application applied by governments of importing countries to determine the country of origin for the goods. Measures implemented include trade policy instruments such as anti-dumping and countervailing duties, origin marking and safeguard measures The last chapter in the classification framework is Chapter P which focuses on export-related measures. Export-related measures are all measures applied by the government of an exporting country to exported goods, including both technical and non-technical Basically these are the measures that a country applies to its exports. It includes export taxes, export quotas and export prohibitions.

Haveman et al. (2003) divided NTMs into four categories or effect types – price effects, quantity reduction, quality restrictions, and threat of retaliation. Price effects include minimum import pricing, trigger prices, and variable levies; quantity reduction is due to quotas, seasonal prohibitions, and orderly marketing arrangements; quality restrictions are related to health, safety or technical standards; and threat of retaliation such as antidumping and countervailing duty investigations. The authors noted that the price-raising effect of a NTM normally dominates the quantity-reducing effect, resulting in an increase in the value of trade between two countries. The authors also found that while tariff imposed by the export market can lower both the volume and volume of trade, a NTM on the other hand can have dual effect-increase or decrease the value of trade, depending on domestic elasticity. The argument points to the elasticity which determine whether a coefficient is positive or negative. When the quantity effect dominates the price effect, the coefficient is negative; it becomes positive when price effect dominates the quantity effect.

However, the literature is scare on which NTM effect (price effect, quantity restrictions, quality restrictions, and threat of retaliation) is stringent and significant for Malaysian exports. Generally, it can be argued that price effects that arise from import pricing, trigger prices and variable levies, can lead to a lower export level due to high

costs of exports. This can lead to a reduction in quantity which in turn affects export levels. The quality restrictions would be negatively related to export level; as more stringent quality restrictions may constrain exports. The threat of retaliation can also impact export level. The seriousness in imposing anti-dumping law on exporters can lead to lower export level. In the case of Malaysian exporters, there is a real paucity of studies on the Haveman et al., (2003) NTM types faced. This study seeks to fill the gap in this body of knowledge by examining these NTMs' effects types faced by Malaysian exporters.

2.3 THEORECTICAL LINKS BETWEEN NTMs AND TRADE

Studying NTMs and its effect on trade requires understanding of trade theories and models. The Mercantilist theory was the first notable theory that expounded on international trade patterns. In the views of Oser and Brue (1988), Mercantilist theory was highly nationalistic in its outlook, favoured state regulation and centralization of economic activities including foreign trade, stressing the need to increase the stock of precious metals, namely, gold and silver to reflect a nation's prosperity, protection for domestic businesses and encourage exports rather than imports (Warburton, 2010). As the currency of trade was gold and silver, nations could prosper by accumulating these precious metals by exporting more and importing less. The more gold and silver a nation had, the richer and more powerful it was. Protectionist measures such as giving subsidies and tax rebates to protect local businesses were implemented to encourage exports and discourage imports resulting in nations having a favourable balance of trade. Hayek (1988) argued that governments largely hamper long-distance trade than initiated it. Hence, the Mercantilist theory has laid the seeds of NTM implementation as an invisible form of protectionist measure. Free trade, in Mercantilist theory terms, does not benefit both trading nations on an equitable scale.

Following the Mercantilists theory, absolute advantage theory emerged. The theory of absolute advantage was introduced by Adam Smith, who emphasized the importance of free trade in order to increase the wealth of all trading nations. According to the absolute advantage theory, trade between two countries happens for goods that have absolute advantage. The principle of absolute cost advantage points that a country will specialize and export a commodity in which it has an absolute cost advantage. Mutually beneficial trade happens on the principle of absolute advantage with the premise that there are two countries, two commodities and one factor (labour) of production. The theory is based on the labour theory of value, which asserts that labour is the only factor of production and that in a closed economy, goods are exchanged in accordance to the relative amount of labour they took to produce. From the above explanation of the concept of absolute advantage, the theory focuses on the ability of a country to specialize in the production of ~~a~~ goods more efficiently than another country. Unlike the mercantilism theory, the absolute advantage theory encourages trade between countries. NTMs' influence was ignored in this theory. In reality, NTMs can lead to costly labour as exemplified by the following single factor of production such as the need for specialised skills due to imposed requirements. Thus, NTMs could result in a country that has absolute advantage to produce more goods than a foreign country to experience costly labour.

Ricardian theory is based on the model of absolute advantage (Golub and Hsieh, 2000). The theory posits that comparative advantage happens when a country is relatively more efficient in the production of a particular product than another country is in the production of that similar product. Comparative advantage measures efficiency in terms of relative magnitudes. Since countries have limited resources and level of technology they tend to produce goods in which they have a comparative advantage. Comparative advantage implies an opportunity cost associated with the production of one type of

product compared to another. This is the reason why countries tend to specialize in production of certain products. In other words, a country should specialise in producing and exporting those products in which it has a comparative or relative cost advantage compared with other countries and should then import products in which it has a comparative cost disadvantage. This theory can be said to be the milestone of international trade theory as it bases the comparative advantage in costs (value of goods is expressed in terms of labour content and it is the only factor of production) as the basis for trade. Schumacher (2013) argued that the theory's trade model encourages international trade and that nations and populations will benefit from it. Other assumptions are perfect competition and constant returns to scale and free trade. Unfortunately, the assumption of free trade i.e. no restriction on the movement of goods between countries is unrealistic in today's trade situation. Today, international trade faces restrictions in the form of NTMs. Less developing countries (LDCs) and developing countries (DCs) in particular, find it difficult to enjoy comparative advantage in the production of labour intensive commodities due to protectionist policies employed by developed countries.

The Ricardian theory which advocates free trade ignores the influence of NTMs affecting trade between countries. For a number of reasons (mainly due to protectionist policy), NTMs can put a country in a disadvantaged position when it (NTM) can cause the export of products that the country has comparative advantage to become costlier than producing the same product domestically. Hence, in the light of NTMs' strong impact on trade, the Ricardian theory of comparative advantage does not reflect today's real trade situation. On the import aspect, the theory argues that products will be imported from countries that are relatively more productive than when produced locally. In this regard, NTMs imposed by private firms (as well as public policies) in the home country–can significantly increase the cost of importing products, leading to the logic that it is sensible

to produce both products locally. It can be argued that a country may be in comparative disadvantage because of NTMs. However, studies to empirically show this argument are needed, especially with regard to Malaysia.

The Hecksher-Ohlin (H-O) theory stresses factor endowments as the basis for trade (Lam, 2015 and Verter, 2015). The theory expounds that a country should produce and export goods that require resources (factors) that are abundant in supply and import goods that require resources that are short in supply. H-O theory assumes perfect competition, constant returns of scale, and factor endowment to scale. Here, the resource that is in abundance will be used to produce and export products and the products that require factors that are short in supply will be imported. The NTMs' role in determining the product exports orientation (capital intensive or labour intensive) is lacking. The H-O theory is also known as the factor proportions theory, in short it means that factors that are high in demand than supply would be costly; and factors that are less in demand but in abundant supply would be cheaper. Hence, according to the H-O theory, countries produce goods that require cheaper factors of production (labour, land, and capital). In this context of this argument, the imposition of NTMs may render factors of production that are less costly now become costlier due to compliance costs and other investments needed to comply with standards and requirements. The NTMs imposed by importing countries infringe the free trade assumption made by the H-O theory.

The Ricardian and Heckher-Ohlin frameworks assume perfect competition and constant returns to scale as well as only explain inter-industry trade. In reality, this trade model is unable to account for the patterns of trade that pervade today's trading model which mostly involve intra-industry trade. It is no surprise that except for Eaton and Kortum (1997), no other studies on trade barriers effects are found within the Ricardian framework.

H-O theory suggests that firms engaged in exports reflect their intensity in either skills or capital or both. In the case of developed nations like the US, it has been empirically noted that firms are more capital and skill intensive. However, in the case of developing countries, more empirical evidence is needed to explain the developing countries' orientation in their product exports i.e. capital intensive or skill intensive. Alvarez and Lopez (2005) found that developing countries have an abundance of unskilled labour. If Malaysia has abundance of labour, using H-O theory, it can be concluded that Malaysia should export labour intensive products.

This motivates Krugman (1979, 1980) and Helpman (1985) to develop a new trade theory. The new trade theory extended the neoclassical international trade theory by imperfect competition, economies of scale, and strategic behaviour. The new trade theory argues that due to the 'love for variety' by people in the importing countries, this leads to firms producing similar products but these products are differentiated by brand, quality, packaging, etc. The increase in demand for this product variety leads to firms experiencing economies of scale which results in monopolistic competition. Large firms stand to be more profitable in producing and exporting products than smaller firms. Hence, the market moves towards a few, large firms which end up controlling the market. One of the major implications of this model is that the volume of trade is much larger than it would be if differences in international factor endowments were the only cause of trade. Studies using the monopolistic model to assess the trade flow include Lawrence (1987), who was the first theorist to use the model to predict volumes of trade and to use disaggregated data on production and trade flows to determine which countries and industries differ significantly from the model prediction. In his study, he found that Japan has an unusually low volume of imports due to the existence of trade barriers.

The role of NTMs in this theoretical context is in the form of protectionism. NTMs are imposed to protect domestic firms to achieve competitiveness vis-à-vis competitors

from outside. One may argue that NTMs can make firms more innovative due to the need to produce products that are differentiated by higher quality and standards surpassing the NTM requirements in the importing countries. The study on NTMs and its impact on trade flow employ this theory based on the premise that consumers incline to have variegated products which can be differentiated by brands and standards. This notion has clear relations with NTMs where consumers in the importing countries are expected to demand for the product or products of a specific brand and standard. The role of NTMs requires exporters to comply with certain standard requirements if their products are to be accepted by the consumers in the export market. As stated by Leland (1979), compliance with standards' requirements would help to overcome the disconnect between producers and consumers due to incomplete or asymmetric information. Mangelsdorf et al., (2012) supported Leland (1979) and further noted that compliance with standards by exporters from developing countries can overcome the issue of reputation problem and show consumers that exporters from developing countries) are able to meet stringent standards and provide safe products.

Another tenet of the new theory related to NTMs is the economies of scale, where large quantities of product can be produced at a lower cost. Here, the NTMs can enable firms to achieve economies of scale if NTMs act as a catalyst to trade. This then leads to the enhancement of trade and simultaneously bolsters a firm' production of a specific product resulting in it achieving economies of scale. NTMs can thus promote monopolistic competition. Another aspect of the argument put forth by this theory is the fact that large firms tend to benefit in international trade. Here, NTMs make it difficult for small and medium firms to experience constraints in costs, resources and capacities. These firms lack the resources both financially and non-financially to comply with NTMs imposed in the export markets resulting in larger firms controlling the exports. All in all, the new trade theory befits the discussion on NTMs' impact on trade flow. Studies have

found positive relationship between firm size and export behaviour (Wignaraja, 2002; Aitken, Hanson and Harrison, 1997) implying that larger firms tend to be more successful in in their exports. Marandu et al. (2012), found firm size to be inversely related to trade behaviour. The authors further argued that smaller firms perceive NTMs as significant compared to larger firms, citing limited resources, including financial and managerial capabilities as reasons.

The effect of trade barriers to trade flow was not measured until Harrigan's (1993) study on the import-reducing effects of trade barriers in OECD countries in 1983. Harrigan (1993) explicitly adds measures of trade barriers to the original model to directly examine the impact of trade barriers on trade flows. However, in his study, tariffs and transport costs were substantial barriers rather than NTMs. Others who used monopolistic competition framework were Lawrence (1987), Lee and Swagel (1997) and Harrigan (1996).

However, the use of the gravity model to estimate the NTMs in international trade has overtaken other approaches since four decades ago. Many researchers such as Tinbergen (1962), Poyhonen (1963), Linnemann (1966), Anderson (1979), Bergstrand (1985 and 1989), Helpman and Krugman (1985), Eaton and Kortum (1997), Evenett and Keller (2002) and Haveman and Hummels (2004) used the model to estimate trade flow. Recent studies that used this model include Wilson et al. (2005), Soloaga and Montenegro (2006), Djankov et al. (2006), Lejour and de Paiva Verheijden (2004), Walsh (2008), Chevassus-Lozza et al. (2005) and Razzaghi et al. (2012). The utilising of the gravity model in estimating trade flow is well established in economic literature. The theoretical justification for the use of the gravity model of trade is that the model is derived from Newton's law of gravity (Head, 2000). Newton's law states that the farther the distance between two masses, the attraction between these forces are lesser. This perspective underpins the operation of gravity model where it explains that the farther the

geographical distance is between two countries in international trade, the trade volume is expected to be lower. The argument is that when countries are far apart, there are increased number of trade restrictions due to higher transport cost, fewer cultural similarities, demand conditions such as consumer preferences and expectations. Hence, the 'gravitational force' is directly proportional to the masses of the objects (countries).

The model is also analysed against a partial equilibrium model of export supply and import demand ~~as~~ which was developed by Linneman (1966). Anderson (1979) derives that the gravity model postulates CES (Constant Elasticity of Substitution) preferences functions for all countries as well as weakly separable utility functions between traded and non-trade goods. Eaton and Kortum (1997) also develop the gravity equation from a Ricardian framework. Deardorff's (1995) gravity equation originates from one of Hecksher-Ohlin's (H-O) perspective as well. Other arguments justifying the gravity model approach is based on the Walrasian general equilibrium model, which postulates that each country has its own supply and demand functions for all goods.

Traditional trade theories (Abosulute Advantage, Comparative Advantage and Hecksher Ohlin Theory) are only capable of explaining why countries trade but do not explain firstly, as to why some countries' trade links are stronger than others and secondly, the reasons why the level of trade between countries tends to increase or decrease over time. Although, the Absolute Advantage theory initiated the understanding of international trade dynamics, it is unable to explain the changing nature of trade patterns. One reason for this lies in the fact that it considers labour as a homogeneous measure for the production within a country. Another reason for its inability to explain changing trade patterns between countries is due to the idea that a nation with the absolute advantage of producing a good should always export it.

Comparative Advantage theory dwells on the premise that trade between countries can occur due to difference in either factor endowment or technology. However, the

theory could not explain intra-industry trade and does not consider most of other factors such as economies of scale, imperfect competition and demand side of trade. Furthermore, the theory still accepts labour as the only homogeneous production factor within the country which sets the basis for costs and exchange determinant in trade, not considering international differences in labour productivity (Suranovic, 2010). Hecsher-Ohlin's theory introduced capital endowment as an additional factor to the labour as the only factor endowment in the Comparative Advantage Theory.

The difference of two proportioned factors producing capital intensive good or labour intensive good for exports, seems more real in the current trading context. It explains why a country that has an abundance of capital should export capital export of labour intensive good and export of labour intensive good should be done by a country with an abundance of labour (Suranovic, 2010). However, it reality this predicted pattern did not work based on Leontief's (1953) study of USA's trade with the rest of the world. It was found that the USA, as a capital intensive nation, was an exporter of labour-intensive goods and an importer of capital-intensive goods, in contrast to Hecksher-Ohlin's theory. It is evident that these classical trade theories have shown to be deficient in current context of international trade patterns. The gravity model is successful in resolving these shortcomings. The model allows more factors to be taken into account to explain the extent of trade as an aspect of international trade flows (Paas, 2000). Hence, until now the gravity model is heralded as a good choice in analysing bilateral trade as it contains elements of both the demand and supply side explanations of trade.

Other firm based trade theories include Country Similarity Theory (Linder, 1961), Product Life Cycle Theory (Vernon, 1966), Global Strategic Rivalry Theory (Krugman, 1980) and Porter's National Competitive Advantage Theory (Porter, 1990; Grant, 1991). Unlike the country-based theories, these theories incorporate other product and service factors in explaining trade flows. These factors include brand and customer loyalty,

technology and quality. However, these theories have disregarded the NTMs as a factor to be considered in international trade. The Country Similarity theory dwells on the premise that trade (export) is most likely to happen between countries that have similar preferences. Measures of similarity include similar per capita income and common intra-industry trade. The manufacturing sector is the main focus in this theory's argument. The argument on NTMs with this theory could be similar to the monopolistic theory, where the NTMs can lead to firms producing differentiated products and building brand images that can help increase consumer's acceptance of these products in importing countries. However, this has to be within the limits of the Country Similarity theory's assumption of similarity in consumer preferences and similar income per capita. NTMs can result in trade becoming more difficult between countries with similar income per capita and consumer preference.

The Product Life Cycle (PLC) theory explains international trade patterns according to the PLC stages. The theory posits that when a product is at a new product development stage, it will usually be produced in the home country. However, when the product is at the maturity stage, firms will find locations where cheap factors of production can be obtained. However, the PLC theory ignores the emerging countries' capabilities in research and development, where highly skilled labour and technology are available even at the new product's development stage. The PLC theory does not consider NTMs in explaining the patterns of trade despite the possibility of NTMs having important repercussions. Compliance to NTMs can cause firms to seek research and development capabilities in cost efficient countries like China and India. According to Bhaumik et al. (2009), China and India have become the choice for firms pursuing low cost solutions through R&D offshoring. The authors state that with large technical and scientific manpower coupled with a huge and growing market, India and China are emerging as preferred destinations for the offshoring of R&D. As Huggins et al. (2007)

noted that in 2006, India and China were the most popular destinations for research and development projects. This is to reduce overall compliance costs imposed by NTMs. Hence, this theory cannot prevail in reality.

Global Strategic Rivalry theory (Krugman, 1980) posits firms achieving competitive advantage to compete in a competitive industry by creating barriers to market entry. Firms need to achieve sustainable competitive advantage in order to compete in the industry with competitive players. Sources of barriers to entry are as follows; i) strong research and development capabilities, ii) ownership of intellectual property rights, iv) economies of scale, iii) unique business processes, and iv) control of resources or favourable access to raw materials. However, the role of NTMs in explaining competitive edge of firms is not dealt with in this theory. In the wake of stringent NTMs, firms may have problems achieving competitive advantage. Exporting to countries that will incur high compliance costs may affect their product pricing strategy which could result in them not achieving the desired competitive edge. It may also be the case where a once competitive firm can become less competitive due to NTMs.

The Porter's National Competitive Advantage theory (Porter, 1990; Grant, 1991) stresses that a nation's competitiveness in an industry depends on the capacity of the industry to innovate and upgrade. According to this theory, four determinants control a nation's competitiveness capacity. They are i) local market resources and capabilities, ii) local market demand conditions, iii) local suppliers and complimentary industries, and iv) local firm characteristics. The NTM factor was not included in this theory when explaining trade. NTMs can result in firms being in both favourable and unfavourable positions. NTMs can further encourage firms to produce quality and innovative products which are demanded by importing countries. This leads to higher demand quantity resulting in firms achieving economies of scale, in return becoming more competitive via lowering product price (due to lower average cost) in the importing country. However,

this scenario is likely to happen only to large and established firms. On the other hand, NTMs can result in firms experiencing higher compliance costs which will put them at a disadvantage when competing with firms in an importing country. Hence, if a nation has exporters that are not in a position to withstand or cope with higher compliance costs and requirements due to NTMs, the nation becomes less competitive. This theory does not reflect the reality of the trade situation at present time.

2.4 PAST STUDIES ON NTM IMPACTS ON EXPORTS

The WTO (2012) stated that studies conducted in quantifying the effect of NTMs found that the impact of NTMs on trade is almost twice as much as of tariff. In a study by Hoekman and Nicita (2011), NTMs reduced by 5 percent will improve trade by 2-3 percent. Three broad effects were identified by Dhar and Kallummal (2007), arising from the impact of NTMs. These effects are a) regulatory protection effect- rent to domestic sector; b) supply shift effect- compliance cost impact in terms of increase in domestic supply; and c) demand shift effect-new information effect, which leads to increased demand. These effects are discussed in the perspective of a welfare-oriented approach. Effects in the context of the mercantilist approach are on compliance costs and market entry decision (Melitz, 2003).

The literature also discussed the effects of NTMs on small and large firms. The costs incurred for compliance to standards and regulations affect small and large firms differently which in turn determine their capability and capacity to compete and achieve profits. Granslandt and Markusen (2000) also stated that the regulations and standards could impose a fixed cost for firms which could affect their competitiveness when they enter a market. The authors argued that the difference in the costs due to difference in standards gives rise to real trade costs for exporters, hence putting them at a disadvantage position to enter a market. The cost of entry could be high and as a result their ability to

compete with domestic players for the same product type is affected. Melitz (2003) added that the unmanageable fixed costs can cause a firm to decide not to enter a market. This could result in trade diversion. Granslandt and Markusen (2000) added that the incompatible standards do not favour the small firms (exporters) as their costs of compliance could be a substantial amount.

Standards and technical regulations imposed by importing countries are a serious matter for exporters especially from developing countries. The seriousness of standards as NTMs is reported by Chen et al. (2008) which found that 40 percent of exports from developing countries are subject to NTMs including standards. As reported by UNCTAD (2005), the inability to meet stringent environmental and safety standards by developing countries have led to the failure of exporting their agricultural and manufactured products to developed countries. The standards and technical regulations have only served to strengthen the domestic players and achieve competitive advantage vis-à-vis exporters especially from developing countries.

The paper by Chen et al., (2006) involved 17 developing countries and only two Asian countries were implicated, and none were from the ASEAN region. So the argument about standards and export decisions involving developing countries in its entirety is inconclusive. Many other developing countries were not studied to confirm that standards impact their export decisions. The research findings, however, could be different for ASEAN countries. For example, Malaysia, a developing country in the ASEAN region, has improved its global enabled ranking (Lawrence et al., 2012). The report noted that Malaysia has established institutions, policies, and services that facilitate free flow of goods over boarders. Though this report informs of Malaysia's improvement in ease of trading position, it also tells about the country's seriousness in global trade, hence it could have undertaken efforts to be competitive in foreign markets, which implies the possibility of meeting the standards imposed by importers on Malaysia's exports. For

this, research is warranted for Malaysia to strengthen the argument on standards becoming a hindrance to export decisions in developing countries.

Chen at al. (2008) discussed four types of standards. These include quality standards, design standards, testing, and certification procedures and labelling requirements, all of which have distinct objectives. Standards are used as a strategic tool for product differentiation and market segmentation (Clayton et al., 2003). Smith (2009) researched the prevalence of public and private standards and found that firms have incentives to provide, for example, high quality food to gain competitive advantage and it was further noted that in cases where information was made available to consumers on how to judge if food quality is imperfect or otherwise, market and legal incentives may be insufficient to give consumers the level of quality and protection that society as a whole would like.

Studies on NTMs' effects on Malaysian exporters are rare. As such, this research will contribute to the body of knowledge in this area. According to Dhar and Kallummal (2007), the welfare-oriented approach was adopted to isolate only those measures that restrict trade. It did not address the measures taken for legitimate reasons i.e. protection of health and the environment as well as safety (which are sanitary and phytosanitary (SPS) and Technical Barrier to Trade (TBT) measures). The United States-China Business Council (USCBC) made clear distinctions for SPS and TBT measures (standards and regulations) from that of other NTMs such as quotas, licensing/tendering requirements and government and industrial restrictions. Due to this, measures that are legitimate in nature are not termed NTMs. This differs with many other definitions of NTMs which include measures implemented for legitimate purposes. Maskus et al. (2001) pointed out that the principle of national treatment should be taken as a criterion for judging the measure. The author noted that if the standard or regulation is applied for both

domestic and foreign products, then the measure is not trade-distorting, hence not an NTM.

The argument on the NTMs' impacts on trade goes both directions i.e. trade impeding and trade promoting or facilitating. Positive effects of NTMs lead to enhancing trade while negative implications of NTMs result in incurring losses both in financial and non-financial aspects. Financial losses are mainly due to increased costs of compliance. Non-financial losses are related to becoming less competitive in the domestic market of the importing country due to slower time to market, subsidies and other preferential treatment by governments to protect its local firms. While some NTMs are meant to correct market failures, there are concerns that many NTMs may be imposed to protect domestic industries (Liu and Yue 2009), which is contrary to WTO's framework of fair trade policy. For example, the authors argued that the practice of applying SPS and technical trade measures may be discriminatory and unjustified which act as barrier to trade (Grant and Anders, 2010; Baylis et al., 2010; Otsuki et al., 2001; Disdier and Marette, 2010) even among the WTO members. WTO (2012) informed that NTMs which are imposed for legitimate reasons such as to address market failures, still will still incur costs for exporters.

Survey findings from across the world show that NTMs have constrained businesses in their ability to make inroads into the foreign markets (OECD, 2003). In a survey conducted by the International Trade Commission (ITC) Client Surveys in 2008, involving 300-1500 companies in each country, NTMs have become the top three concerns in their trading practices with foreign markets. Developing countries are mostly negatively affected by NTMs. These countries have limited access to information, infrastructure and minimal capacity to withstand the impact of the NTMs requirements. As noted above, exporters responding to NTM requirements mostly face increased costs

of compliance and longer time to deliver the products, hence reducing their competitiveness.

For example, exporters usually get their products to undergo laboratory testing, securing conformity assessment certificates, inspection of shipment before the goods are delivered. The entire process can be really time consuming along with increased costs incurred. The effects of failing to meet the NTMs requirements can be extreme to the point of imposing full bans on products from entire countries and regions. In the last two decades full bans were imposed on Asian and African countries. In 1997, the EU banned all fishery products from Bangladesh due to food safety concerns. The seafood processing plants in Bangladesh were found to have serious quality control problems by EU. This resulted in overall decline of 8.7 percent in Bangladeshi seafood exports globally (Cato and Dos Santos, 1998). The ban caused Bangladesh exporters to deflect their exports to other countries like Japan and US.

It can be said that trade deflection is a course of action which could be a norm for exporters facing the impact of NTMs. In the context of Malaysian exporters, there is lack of evidence of trade deflection or other responses due to NTMs. Literature in understanding this relationship is still in its infancy, especially with regards to exporters from developing countries.

On the other hand, NTMs do enhance exports. Rial (2014) noted that exporting countries complying with NTMs' requirements in the markets which they have already accessed, tend to enhance exports. Due to an understanding of and complying with the NTMs, these countries have become more competitive than countries that have yet to establish their mark in the markets. Neeliah et al. (2013) in supporting this argument, found that certain exporters from middle-income countries who are able to comply with strict SPS measures, use this as a strategy to compete with exporters with low cost of production, because these exporters may not be able to bear the high costs of compliance.

This situation could be a concern for those exporters especially from developing countries and less developed countries as the high compliance costs may render it difficult for them to access to export markets.

Rial (2014) also noted that reduction in information asymmetries between consumers and producers, in regards to the quality and safety of the product, favours export enhancement. The effort undertaken to comply with NTMs could ultimately result in positive impact for the exporters concern through capacity upgrade and instituting procedures and regulations that promote efficient process and production facilities (Van Tongeren et al., 2009).

It was noted that exports can be enhanced through harmonisation of NTMs. The SPS and TBT agreements per se, seek to promote harmonisation mainly to allow exporters to reduce adaption costs (related to product information and product compatibility) in importing markets (Maskus et al., 2001).

Stringent requirements could adversely affect exporters as compliance can be expensive. In such a situation, exporters from developing and less developing countries may be in a disadvantaged position as they may face constrains in accessing compliance resources, among which are scientific and technical expertise, consultants, institutions, and limited information and finance as opposed to developed countries (Jongwanich, 2009 and Henson and Loader, 2001). The argument put forth is that compliance with NTMs leads to higher value of products produced and exported. This study's findings will be able to shed some light on which side of the coin Malaysian exporters operate. Studying the NTMs' effects is relevant for adopting suitable policies for exporting countries and development of export approaches that promote competitiveness.

The literature also discussed NTMs' impact on export decisions. Melitz (2003) studied export decisions at the firm level. He discussed that firms decide to export based on their marginal cost (MC) as threshold level. If the MC is higher when doing business

in the domestic market, there is the possibility that firms will exit. When MC is higher in serving export markets and lower in domestic markets, the firms will not decide to export but remain as a domestic market player. Firms decide to expand into international markets when MC (marginal costs) to do business in the international markets is lower than the threshold level. The model by Melitz (2003) helps explain the connection between the marginal costs and standards faced by exporters. This research involving the Malaysian exporters is expected to shed light on responses of Malaysian exporters when faced with NTMs. Understanding the kind of responses by the exporters in facing the challenges imposed by NTMs (public standards included) as well as private measures will have significant implication to theoretical understanding, trade policies, and development plans. Unfortunately, little information is known in this area and therefore this study seeks to fill in this gap where appropriate.

Mehta and George (2003) highlighted the plight of a large developing country like India in penetrating international market with stringent SPS standards. As a result of stricter and shifting standards in developed countries, many Indian exporters exit the market while some others find alternative markets. In this case, the Indian exporters could have succumbed to escalating marginal costs (Melitz's model) causing them to face losses in the international market and eventually exit the markets. It is clear that quantity reduction as one of the effects of NTM as studied by Haveman et al., (2003) seems to fit well in the Indian case. However, Disdier et al. (2008) showed that Ecuador, Costa Rica and Kenya exporters did not lose export markets due to SPS and TBT measures and its higher costs of compliance. Haveman et al. (2003) and Disdier et al. (2008) provide in-depth understanding on why some exporters benefit from higher compliance costs while others exit the export markets due to the same reason.

Following the above discussion, the Melitz (2003) model and the signalling theory (as discussed in Chen. et al., 2008) are instrumental works in establishing the connection

between standards and regulations and export decisions. The signalling theory argues that exporters understand and can access information pertaining to the standards and requirements of the importing countries. This sharing of information can be beneficial to all parties. The example of the ban on Bangladesh highlights the case of domestics standards when not in sync with international standards due to lack of information.

Researches commonly cite the following reasons as to why companies, especially among developing countries, do not establish standards that match the international community, which are increased cost of compliance, lack of expertise, limited knowledge of what is expected and limited infrastructure amongst others. The lack of transparency among exporters of the standards expected by importing countries is often overlooked. To elucidate further, it is useful to refer to Chen et al. (2008), who argued that signalling theory is often not discussed as it should be. Signalling theory argues that standards and labelling requirements positively impact exporters in terms of export volume and export scope. The argument is that quality standards reduce consumer uncertainty leading them to decide to buy products even at higher prices. The same argument is given for product and design standard, compliance to which would result in product compatibility and reduction in coordination failures among producers.

However, as noted by the authors, the same is not true for regulations related to testing and certifications imposed by importing countries. This contribution is definitely useful in understanding which regulations affect the exporters' performance in terms of economies of scale and scope. Both traditional theories and the gravity model seem to ignore the importance of signalling in trade. This could be because information asymmetry is not treated as an NTM with respect to NTM classification by UNCTAD version 12. However, the role of information cannot be denied in trade flow. This conclusion is made based on the lack of consideration given to the role of information transparency on standards and requirements.

Buyers' uncertainty about the quality of products offered for sale impedes international trade (Greif, 1992). Spatial, cultural, and linguistic barriers in international trade accentuate buyers' difficulties in discerning product quality. Exporters from developing countries face greater challenges credibly signalling product quality because international buyers tend to infer product quality from the generally poor reputations of products' country of origin (Hudson and Jones, 2003). As Chiang and Masson (1988) observed that exports from developing countries usually are subject to 'statistical discrimination' amongst consumers in the export markets due to imperfect information. Fisher (2006) noted that exporters from developed and developing countries often complain, among other things, on the general lack of transparency about doing business in a given market.

Some NTMs can expand trade as they enhance demand for goods through better information about the good or by enhancing the goods (Maertens and Swinnen, 2009). This is supported by Leland (1979) in his argument that information asymmetries can be reduced due to the transparency of or informing on the minimum quality standard. Transparency and openness in countries' regulatory processes are fundamental in ensuring the development of regulations that are effective in achieving legitimate regulatory objectives while minimising their impact on international trade (Raj, 2005). Promoting transparency, predictability, and public participation in the development of regulatory and policy decisions includes making information and regulations accessible to all domestic and foreign persons and businesses requesting them, providing a meaningful opportunity for foreign stakeholders to comment before a proposed measure is adopted, and opening regulatory and rule-making processes to all interested parties (Shortall, 2007).

However, there could be instances where information on private standards may not be readily available and accessible. These can be an important hindrance for exporters.

Literature on the private standards as trade barrier is scarce, especially in the case of food chains, both public and private systems are influenced by trade agreements in the WTO and by the work of international food quality standardisation organisations. While this leads to increased transparency of public regulatory processes, one concern is that a similar level of transparency may not apply to private standards and their associated control and enforcement processes.

Firms have incentives to provide high quality food in order to gain competitive advantage, but in cases where information available to consumers on which to judge food quality is imperfect, market and legal incentives may be insufficient to give consumers the level of quality and protection that the society as a whole would like. While easy access to regulatory information is important for domestic companies, it is critical to foreign firms that may be unfamiliar with the economic, cultural, and regulatory environment of a particular market (Czaga, 2004). Indeed, international trade depends on such transparency. As one economist puts it, "it is important for traders to know what the rules are and where to find them" (Kleitz, 2006). To succeed in an overseas venture, firms must have information on the specific rules, regulations, and other requirements to help them understand the risks, constraints, and other factors that they will face if they enter the market. This information is of equal importance to them once they operate there.

Other important benefits of open and transparent regulatory processes are that they give firms more time and flexibility to adjust to regulatory changes and may help increase firms' compliance rates (Czaga, 2004). The openness of countries' regulatory rule-making processes to all interested domestic and foreign parties also improves regulatory efficiencies while reducing the likelihood that ineffective or discriminatory regulations will result in technical trade barriers. Moreover, when all domestic and foreign stakeholders can contribute to the regulatory process via formal and informal consultations, their involvement can reduce 'buyers' uncertainty about the quality of

products offered for sale which impedes international trade (Greif, 1992). Spatial, cultural, and linguistic barriers in international trade accentuate buyers' difficulties in discerning product quality. As Chiang and Masson (1988) observe, "Information imperfections may cause consumers to practice 'statistical discrimination' against imports from developing countries.

The above discussion is sufficient grounds to argue that the signalling aspect needs to be included in international trade studies to provide a more accurate picture of trade flows. The absence of signalling standards and requirement in the study of NTMs' impact on trade may produce bias results and conclusions. Hence, it is imperative that the level of knowledge or information about standards and requirements possessed by exporters and importers be considered as one of the variables to measure the impact of NTMs on trade. This study explores the effect of information asymmetry on Malaysia's exports (export level).

Paying no or less emphasis on the importance of NTMs, particularly the SPS and TBT, can render exporters in an unfavourable position with regard to the domestic competitive markets of importing countries. Fontagne et al., (2005b) found that environment related measures i.e. SPS and TBT have negative impact mainly on global trade of fresh and processed food relative to manufactured products. Metha and George (2003) further highlighted the nature of trade complexity and market access by developing countries into countries that enforce the SPS measures. Bao and Qiu (2012) noted a similar impact involving TBT measures. The survey results suggest that a large number of companies are affected by NTM-related problems, most of which are technical measures (SPS and TBT).

Malaysia's exports constituted 74 percent of its GDP (Gross Domestic Product) in 2014 (World Bank, 2015). If exports suffer, it will have a negative impact on the Malaysian GDP. It was found by Krueger (1978), Feder (1982) and Thornton (1996) that

countries exporting a large part of their output tend to grow faster than other countries. Kumar (2015) studied the relationship between GDP and exports in India for the period of 1980-2009 and it has positive causality i.e exports contribute to economic growth. Asim (2014) discussed in his paper that exports significantly contribute to economic growth as it involves more capacity utilization, perfect resource allocation, economies of scale, improve hi-tech innovations as a result of soaring rivalry in the international market.

The economic and empirical theory remains unclear on whether trade is enhanced through harmonisation of NTMs. Although efforts have been taken to quantity the effects of NTMs on trade, the outcome still remains inconclusive due to the fact that data is either incomplete or not available (Korinek et al., 2008). However, as opposed to the common findings that NTMs restrict trade, there are arguments put forth i that NTMs do facilitate trade, hence providing conflicting points against theoretical predictions that standards hinder trade. Swann et al. (1996) noted that national standards encourage imports into the UK. This argument on how the barriers enhance trade is based on signalling theory which can provide an alternative perspective to the mainstream literature on NTMs. Kee et al. (2010) noted that during the crisis in 2008, countries use NTMs like state assistance and local content requirements against imports. Cadot et al. (2010) noted that the vast literature on NTMs still does not provide clear identification, measurement, and impact of NTMs on trade. It is still very much a vague area which can benefit from scientific research. Fisher (2006) pointed that it might be useful to provide aid to address the internal market barriers that impede exports such as cumbersome domestic regulatory frameworks.

Importing countries often impose NTMs for legitimate reasons such as setting safety regulations and standards that prevent the spread of harmful diseases and protect consumers. However, there is growing concern that such measures can act as barriers to

trade flow. Standards imposed that impede trade flow may be due to political purposes (Baylis et al., 2009). While some NTMs are meant to correct market failures, there are concerns that many NTMs may be imposed to protect domestic industries (Liu and Yue, 2009), which is contrary to WTO's framework of fair trade policy. Tariffs are widely used to protect domestic producers' incomes from foreign competition and non-tariffs are used to restrict imports.

Fontagne et al. (2005) assessed environment related NTMs and presented the motivation behind imposing the standards by importing countries. The authors found two reasons to do so. Firstly it is for protectionism purposes as importing countries tend to be protective of their firms against exporters. Exporters complying with the standards are disadvantaged vis-à-vis the domestic firms in the importing country. This causes exporters to lose out in the market place. Secondly, it is based on concerns for the environment i.e. measures are taken to protect human, animal and plant life or health. Although this is a legitimate reason for environment related (SPS and TBT) standards to be imposed on exporters, it could nevertheless result in both an increase or reduction in exports.

Fontagne et al. (2005) distinguished between a protectionism measure and environmental concern measure (which is a legitimate reason from WTO's free trade perspective). According to Fontagne et al. (2005), when many countries are affected by environment related standards and regulations, it implies a wider consensus i.e. both parties-exporters and importers, understand the legitimacy of the standards and regulation to safeguard the impact of the product on the environment or the magnitude of risks for health and safety. When a single country or limited number of countries enforce the standards and regulation, it is highly possible they did it to protect domestic firms, which is against the WTO rules of free trade. Lee and Chen (2011) concluded that developed nations have resorted to protectionism in the name of environmental protection which

resulted in developed nations trading among themselves. Their action has side-lined developing countries, thus hindering their export expansion efforts.

In the light of the above discussion, the reason behind imposing standards and regulations could be a critical factor in enhancing or reducing trade. However, there is little evidence to firmly establish the kind of motivation (protectionism or environmental concerns) and its effects on trade.

2.5 MEASUREMENT OF NTMs

The existing literature has provided information on the methods used in measuring NTMs. Deb (2006) initially tabulated these methods and the table has been enriched with more studies measuring NTMs in recent years. The measures include non-econometric and econometric approaches. The non-econometric approach comprises of the frequency or coverage approach, price wedge approach, and survey based approach. The econometric modelling approach consists of gravity models, augmented gravity models and CGE (Computable Generalised Equilibrium) analysis. Strengths and limitations of the methods are provided in Table 2.1. Each method allows for the possibility of prioritising different types of mechanisms. Surveys, for example, can determine which specific NTM are important to exporters. However, the survey method has one main disadvantage as the cost incurred for this method is generally high. Additionally, Carrere and de Melo (2011) noted that surveys conducted on different products and countries are not suitable to be compared with one another as the standard level used for comparison differs greatly.

The inventory method is a popular method adopted to quantify NTMs (Beghin and Bureau, 2001) and is used commonly in regulations or standards, detentions and industry complaints. The rules and actions imposed in these areas are subject to counting, which then creates the NTM variables for analysis. The inventory approach has

limitations in that it does not show differences in the impact and types of standards. In employing the gravity model to examine the potential impact of NTMs on trade, the use of count variable is often used (Beghin and Bureau, 2001). The count of standards and other NTMs have been used in various studies. One of the earliest studies was done by Swann at el. (1996). The authors used the count of standards in determining the possible impact they have on trade in Germany and the UK. The actual level of standard was not analysed based on the assumption that all standards have equal importance, hence they have equal weightage. However, their study made the distinction between the existence of similar standards that exist across countries and standards that differed internationally.

These counts were included in equations to determine the impact of standards on imports, exports, and overall trade ratio. A similar count method was used by Moenius (2004) involving 12 different developed countries. The author incorporated the counts in the gravity model of trade. Like Swann et al. (1996) and Moenius (2004). they made the distinction between shared standards and country specific standards. Swann et al. (1996) and Moenius (2004) both used the count method and found that the inability to measure the severity of the standards seems to be a major limitation.

The frequency ratio only reflects the incidence of the NTMs. It does not show the impact on prices, trade and welfare. However, the occurrence of the NTMs is valuable information. One of the advantages of using the frequency index is that it does not suffer from endogeneity of the weights in the import value. The coverage ratio (CR) faces the problem of endogeneity that renders the ratio downward bias. The frequency index does not attach the import value and only considers the presence and absence of an NTM in a product category. The frequency index only gives the percentage of the import transactions that are affected by NTM.

The coverage ratio (CR) measures the extent of trade covered by NTM. The CR becomes higher if more products are affected by NTM. As mentioned above, the CR has

the problem of and /or it has larger import value of the affected products, where if a product in a product category is totally affected by NTM, that weight will be zero, hence the CR is downward biased. To eliminate this problem, the frequency index is used. Recent studies use both the coverage ratio and frequency index to measure the impact of NTM on trade as exemplified in Bao and Qiu's studies (2010).

Empirical methods that are commonly used to analyse bilateral trade is the gravity model. The model is derived based on the Newtonian's physics function that describes the force of gravity. The gravity model is based on this law and uses it to study trade. Studies in estimating the variables' effect on bilateral trade have been many and on-going. The gravity model is widely used in empirical literature to estimate the determinants of bilateral trade (Oguledo and Macphee, 1994). Other studies include Hassan (2001), Batra (2004), Sohn (2005), Rahman (2010), Hatab et al. (2010) and many more. The gravity model was subject to criticism for lacking in theoretical foundations of trade until the model was given rigorous theoretical justification by authors like Helpman (1987), Anderson (1979) and Bergstrand (1985, 1989) which greatly improved its validity and reliability (Baltagi, 2001). In its simplest form, the gravity model explains the flow of trade between a pair of countries as 'proportional' to the gross national products or economic "mass" or national income and inversely proportional to the distance of countries engaged in trade. Tinbergen (1962) and Poyhonen (1963) were among the first to use the gravity model to study trade flow.

In the past decade or so, the gravity model was accepted and utilised by many other authors to study trade between countries. Among them are Matyas (1998), Cheng and Wall (2005), Egger and Pfaffermayr (2003) who claimed that the gravity model is a good empirical tool that gives a better fit to the most of regional and international trade flow data sets. The following researchers: Clausing (2001), Cernat (2003), Ghosh and Yamarik (2004), Jayasinghe and Saker (2007), Carrere (2006) and Vicard (2009) used

the gravity model to assess trade creation and trade diversion. Others like Aitken (1973) and Frankel (1997) captured regional trade agreement's (RTA) effect using the gravity model. Soloaga and Winters (2001) studied the distinct effect of trade creation and trade diversion using dummy variables. The basic gravity model in equation was augmented with additional variables. Aitken (1973) was the first to augment the basic model by adding a dummy variable (value of 1 if the trading countries belong to the same agreement regulation and zero otherwise) to study the effect of a Preferential Trade Agreement (PTA) on trade. The study showed that PTA members have a positive effect on bilateral trade among its members. Other authors that studied the PTA effect, besides those mentioned above, include Hamilton and Winters (1992), Frankel and Wei (1994) and Pusterla (2007). Feenstra (2004) used the gravity model to assess the impact of additional variables like sharing of borders between the trading countries, common language used, and membership in RTA.

Sen et al. (2013) recently studied bilateral trade using the augmented gravity model. The authors also studied the effect of PTA on intra-regional trade within ASEAN plus six members. Linders and de Groot (2006) argued that a logarithmic transformation of the gravity model will not hinder the estimation process. There were four PTA dummy variables that augmented the model.

There are also other variables that have augmented the gravity model. Among them is testing the effect of infrastructure on bilateral trade (Saputra, 2014). The infrastructure variable can have a negative or positive effect on exports. Good infrastructure is expected to reduce costs, thus promoting exports. On the other hand, if the state of the infrastructure is poor, it would be costly for exporters to export their goods, thus this acts as a deterrent in promoting trade. Hence, the coefficient of the infrastructure variable may be positive or negative depending on the quality of the infrastructure. Another important variable is the effect of exchange rate on trade which is commonly

studied using the gravity model. Cieslik et al. (2012) studied the exchange rate effect using gravity model. Others who studied the exchange rate's effect on bilateral trade include Ullah and Khan (2014), Jafari et al. (2011), Wang and Ji (2006) and Kwack et al. (2007).

The exchange rate variable studies a currency's volatile (appreciation and depreciation) impact on bilateral trade. Currency depreciation (increase in exchange rate) in a country is expected to provide favourable conditions for exporting products as it is cheaper to export. On the contrary, currency appreciation would cause importing to become expensive, hence the affected country is expected to decrease its import of goods. As documented by Kwack et al. (2007), the renminbi appreciation contributed to a reduction in China's trade surplus.

Variables like common broader (Agostino et al., 2007, Warin et al., 2009; Normaz, 2010; Xu and Julian, 2012; Saputra, 2014), language (Xiong, 2012; Agostino et al., 2007; Warin et al., 2009; Normaz, 2010; Xu and Julian; 2012, MacPhee and Sattayanuwat, 2014), colony (Agostino et al., 2007; Warin et al., 2009), culture and export experience (Lawless, 2013) of the importing country have been augmented to the gravity model.

Peridy and Ghoneim (2013) studied the effects of NTMs on product categories pertaining to the Middle East and North African (MENA) countries. The authors studied the effect of 16 NTMs on 10 product categories. The study found that NTMs contributed to significant impacts in certain MENA countries. The gravity model used in the study showed that NTMs contributed to a significant decrease in trade for a majority of the MENA countries. Hoekman and Zarrouk (2009), through a survey approach, identified NTMs' negative effects on trade in MENA countries.

Others who studied NTMs using the gravity model include Carrere and de Melo (2011), Ghali et al. (2013), Rahman and Ara (2010), Walsh (2008), Xiaohua and Qiu

(2012) and Sun et al. (2014). Walsh studied the total services trade which according to the author has similar outcomes to trade in goods when using the gravity model. The study found that the collective wealth of countries and a common language seem to be the most important determinants. However, there is a difference as in the trade of goods, distance was not a significant determinant as opposed to in trading of services. The NTM variable included in the model is found to be insignificant in trading of services.

Rahman and Ara (2010) studied the transaction costs (TC) as a trade barrier to analyse trade flows of Bangladesh. Their study showed that TC is significantly related to trade and as expected has a negative sign denoting higher TC reduces bilateral trade. Bao and Qiu (2012) studied the effects of technical barrier to trade (TBT) on China's exports. The study found that the TBT of a developing country has significant effects on the export patterns of other developing countries but it has no significant effect on a developed country's export patterns.

Challenges and limitations of the use of gravity models have been noted by Yotov et al., (2016). Multilateral resistance is a challenge for researchers using grvity model in their study as the terms used to denote the construct are theorectical in nature which are not obersavable by both the researcher and policy maker. Another limitation arise from the of the use of ordinary least square (OLS) to estimate gravity equation. The drawback of the OLS is it is unable derive information from zero trade flows because observations (information) gets dropped from the estimation sample when the value of trade is transformed into a logarithmic data. According to the authors, this problem zeroes become a serious issue when the trade data becomes more disaggregated. The authors also highlighted the problem of trade data plagued with heteroscedasticity in gravity equations where its presence can lead to biasness in estimates of the effects of trade costs and trade policy. Further, obtaining reliable estimates of effects of trade policy within the gravity model is a challenge, especially with regards of variables that are endogenous

where it is possible of these variables to interact with unobservable cross-section trade costs. The presence of fixed effects for importers and exporters is a cause of concern for researchers to estimate the effects of non-discriminatory trade policy such as export subsidies or most –favoured-nation, within the structural gravity model. The authors noted when fixed effects are present, the gravity model will not be able to estimate the impact of any variable in situations where, i) it affects the exporters' propensity to export all destinations, ii) imports are measured by the variable without regard to origin and iii) representing sums, averages, and differences of country-specific variables. Lastly, although it is common practice to use aggregated trade data, it is should be avoided as the policies developed with these data may not be specific and not effective. Hence, it is important to use disaggregated data for effective policy development and implementation.

The survey method is used to analyse and understand the perceived impact of NTMs. In many specialised literature on NTMs, surveys have been discussed as a quantitative method to evaluate their impact on trade. While the inventory approach is able to identify the type of NTMs, specific details could not be obtained. Laird (1996) argued that surveys could give details that are more relevant by narrowing the scope. Deardorff and Stern (1997) implied that the estimates on NTMs must be done at the most disaggregated level possible.

The WTO Trade Report (2012) used survey findings to confirm the prominent presence of TBT and SPS measures in developing and developed economies. Basu et al., (2012) used firm level questionnaire-based surveys to validate official information. The authors found that through the firm level survey database, information is clearly indicated on the measures imposed by trading partners. The World Bank (2008) found that surveys are able to identify specific information on trade barriers experienced by exporters. It further noted that through such surveys, countries with the least developed economies (LDCs), would be able to properly identify the difficulties (barriers to trade) faced by

their exporters and accordingly come up with action plans to resolve the concerns. Data on perceived barriers (obtained through surveys) provide valuable, complementing information to official data (such as TRAINS database) to identify measures that restrict trade. For example, the WTO (2012) informed that the conclusion on TBT and SPS measures often used by developed countries rather than developing countries are based on both econometric and survey evidence. Though TRAINS currently has the most comprehensive database on NTMs, according to Kee et al., (2004) it gives no indication of the ambiguity of specific NTMs.

World Bank (2008) surveys conducted on LDCs include 23 interviews with exporters in Cambodia and 40 interviews with Indonesia exporters. There was also a sum total of 96.7 percent response from 1000 questionnaires sent to Korean exporters, 44 interviews with Laos exporters, 76 interviews with Peru exporters, 155 survey questionnaire responses from Singapore exporters, 105 survey questionnaire responses from Taiwan exporters and employees from 40 firms in Vietnam were interviewed. International Trade Centre (ITC) admits that it is only through surveys that there is the possibility of identifying specific non-tariff measures which businesses find as a constraint and burdensome to exporters. The survey identifies at product, sector and country-level, the problems that businesses face when complying with NTMs. The NTMs studied by ITC include not only those imposed by other countries (importing countries) but also the bottlenecks in the exporting country that impede exports. ITC has conducted NTM surveys (completed or on-going) in a number of developing and least developed countries(LDCs). These countries include Bangladesh, Burkina Faso, Cambodia, Colombia, Cote D'Ivoire, Egypt, Guinea, Indonesia, Kenya, Jamaica, Kazakhstan, Madagascar, Malawi, Morocco, Mauritius, Occupied Palestinian Territory, Paraguay, Peru, Rwanda, Senegal, Sri Lanka, United Republic of Tanzania, Thailand,

Trinidad and Tobago, Tunisia and Uruguay. Table 2.1 shows the strengths and limitations of measurement methods

Table 2.1: Strengths and Limitations of NTM Measurement and Methods

Method	Strengths	Limitations
Inventory	• It is a useful and easy method to determine the occurrence of NTMs and the frequency of various types of NTMs. • Complements well with other methods such as gravity model. • Can be used in the computation of the Trade Restrictiveness Index.	• It does not show severity of NTMs' impact and does not does not provide a quantification of the effect of regulations on trade per se . • Accounts only for the presence or absence of an NTM, without indicating the value of imports covered. • Endogeneity problem of the import value weights.
Frequency	• Convenient method to determine the incidence of NTMs. • Data is useful to be used with other methods such as gravity model. • No endogeneity problem.	• Import value not attached, only considers the presence and absence of an NTM in a product category. • Does not reflect the relative value of the affected products and thus cannot give any indication of the importance of the NTMs to an exporter overall, or, relatively, among export items.
Gravity Model	• It quantifies the effect of NTMs on trade flows. • A simple and widely used method to show trade flow patterns between countries. • It relies on a limited series of easily available data, which allows for its application to a large set of countries without relying on specific data collection.	• There may be other factors other than NTMs for residual errors. • The negative effects in using this method range from the sensitivity of the results obtained to the specification of the gravity equation estimated, to the quality of the data and to the sample of countries.
Computable General Equilibrium	• Able to assess complex negotiation modalities in multilateral negotiations. • Widely used to study the likely effects of NTMs and development of trade policies. Helps in answering "what-if" questions by simulating the impact of trade policy changes on prices, incomes and substitution effects across products and sectors in equilibrium on markets under different assumptions.	• May not have the features to detect beyond border NTMs and not easy to implement. • Assessment of supply-shift and demand shift effects, in a CGE context is much more complex. • Only extrapolate from existing trade data and interpretation of simulation results could be done hastily without understanding the reality of NTMs.
Survey	• Useful in identifying specific NTMs which might not be possible through other methods.	• It is a costly approach and requires special skills to design and administer. • Data collection could be an arduous task and takes a long time

Malaysia is not included in the survey yet. As of January 2013, more than 16,000 companies have been contacted and around 10,000 of these companies have been interviewed. This adds to the testimony that utilising the survey method to understand NTMs faced by exporters is an important approach in this area. Survey data is used to measure the stringency of NTMs. Moenius (2004), Kox and Lejour (2005), Fontagne et al. (2005), Gebrehiwet et al. (2007) and Winchester et al. (2012), have studied the impact of SPS standards and other NTMs on trade by using indices on explanatory variables in gravity models. However, the stringency index derived from the perceptions of exporters on NTMs was discussed by Melo et al.,(2014). The authors derived the stringency index based on the perception of exporters on the sanitary, phytosanitary, and quality (SPSQ) standards along the 0-7 Likert scale. The aggregate stringency index that captures all NTMs was calculated as a simple average of the stringency perception.

2.6 NTMs AND DEVELOPING COUNTRIES' TRADE

Henson and Loader (2001) noted that the reduction in tariffs by developed countries on imports from developing countries has been impressive ranging from 26 percent to 48 percent. However, this reduction in tariff does not provide proof of trade liberalisation for developing countries to a major extent. Asian countries' exports to developed countries like US, EU, Japan, and Canada have to comply to NTMs even for products that have comparative advantage such as food, chemicals, pharmaceuticals, textiles, leather and engineering products. NTMs faced by Asian countries are mainly in the forms of TBT, sanitary regulation, quotas, packaging, labelling, technical standards, labour and environmental standards and testing an inspection (OECD, 2005). A firm level study by Baller (2007), conducted in both industrial and developing countries consistently identified technical regulations as the main NTMs. A study by Chen et al. (2006) on firm level analysis found that testing procedures and lengthy inspection reduce exports of

developing countries by 9 percent and 3 percent respectively, and that standards reduce the likelihood of exporting to more than three markets by 7 percent. It seems that TMs are the main concern for developing countries. TMs are defined by Roberts and De Kremer (1997) as:

> *Standards governing the sale of products in national markets which have as their prima facie objective the correction of market inefficiencies stemming from externalities associated with the production, distribution and consumption of these products.*

The proliferation of TMs can be established through the increasing rate of its notifications year by year (1981-1998) according to a report by GATT/WTO (OECD, 1997). Especially in the case of agricultural and food exports, a prerequisite to successfully export trade is the compliance to TMs (Horton, 1998). It is widely acknowledged that SPS measures can impede trade in agricultural and food products as theorised by Petrey and Johnson (1993), Thilmany and Barrett (1997), Gordon and Marter (1997). The impact of SPS measures can be conveniently grouped into three categories. Firstly, they can prohibit trade by imposing an import ban or by exorbitantly increasing production and marketing costs. Secondly, they can divert trade from one trading partner to another by laying down regulations that discriminate across supplies. Finally, they can reduce overall trade flows by increasing costs or raising barriers for all potential suppliers. For these reasons, SPS measures are prominent issues for developing countries (UNCTAD, 1997; Singh, 1994; Henson and Loader, 1999).

The TMs associated with risk related or non-risk related externalities were discussed by Roberts et al., (1999). Policy instruments for TMs are used to correct market failures (Caswell and Henson, 1997). Governments can resort to the use of ex-post TMs to redress market failures should the buyer's interest is violated. They can adopt ex-ante TMs such as bans, technical standards or information requirements to remedy failures in the market. According to Caswell and Henson (1997), governments tend to use the ex-

ante measures to control market failures as the measures related to ex-post are usually not sufficient to provide the required level of protection. UNCTAD (2010) also showed that developing countries are not equipped to face the NTMs imposed on their exports. These include their inability to assess the implications of developed countries' requirements, participate effectively in dispute settlement procedures and demonstrate that their (developing countries) measures match the requirements imposed by developed countries (Bellanawitha et al., 2009, as cited in Saini, 2011).

Based on the discussion above, it is important to study the NTMs faced by firms in developing countries for a better understanding of the implications of NTMs in the global trade business. Developing countries have potentially a comparative advantage over developed countries in the food and agricultural sectors (Murphy and Shleifer, 1997; Edwards, 1992). In 1994, 72.5 percent of developed countries imported agricultural products from developing countries (UNCTAD, 1997). The developing countries can be better integrated in the global trading system through exploitation of their national and regional comparative advantages (Bathrick, 1998). Henson and Loader (2001) argued that the ability of developing countries to expand their market globally and integrate into the world trading system depends on their ability to meet the global trade demands which includes pricing, quality, and standards. Developing countries, however, could end up spending substantial amounts of money in order to comply to NTMs. Jakubiak et al. (2006) and Wilson and Otsuki (2004) revealed that 3.85 percent of production costs was spent on compliance and average costs of customs clearance was 6.95 percent of total export value.

Malaysia being a developing country would require studies on NTMs both at national and firm levels, which at the moment are scarce. There is no firm level study on NTMs' effects on trade involving Malaysian exporters. However, there are a few studies conducted on determinants of Malaysia's exports. Mohd and Murni (2012) studied the

effects of having memberships in the Organisation of Islamic Conference (OIC) on Malaysian exports. The study included GDP of OIC member countries, FDI Malaysia, local population size, exchange rate, price ratios, distance and boarder variables in the gravity model. It was found that these variables were the main determinants of Malaysia's exports. However, NTMs' effect was not studied.

Another study was conducted by Normaz (2010) on the role of language on Malaysian exports. The research indicated that countries with a common language, trade more and costs involved in information search is therefore reduced. It further noted that Chinese languages generally have wider acceptance among Asian countries. Haque et al. (2013) studied Malaysia's furniture exports and found that the size of the market that goods were exported to and the competitive aspect of this trade contributed positively to Malaysia's furniture export. However, trade barriers were not analysed in this study.

No study has thus far been conducted on NTMs effect on firms' levels of export with regards to Malaysia's exporters. In this study, the firm's level of export is studied along with the NTMs. Generally, the impact of NTMs on firm size is studied, but in this study besides the firm size, the level of export is also explored. This study focuses on the perceived criticality and stringency of NTMs. The identification of NTMs that a firm considers important for its export is critical while the stringency of NTMs refers to the strictness of the measures which may vary across exporting countries.

Generally NTMs are accepted as measures that can distort trade. However, the level of strictness of the NTMs on export level needs to be studied. The stringency of the a similar NTM imposed across countries may vary greatly due to a number of reasons. For example, this could happen due to non-harmonisation of the NTM requirements (Moenius, 2004; Chen and Mattoo, 2008 and Czubala et al., 2009). An exporter may find the stringency of the same NTM imposed differently across the exported countries. For example, the imposition of maximum residue limits (MRL) on imports of oranges by

Argentina, Brazil, Chile and Columbia (Cadot et al., 2015) reflect the varying stringency of such an imposed measure. The Codex Alimentarius is an authorised international impartial reference for MRLs. It lists MRLs for 83 chemicals. However, Argentina imposes MRLs on 79 different chemicals, Brazil imposes MRLs on 101 different chemicals, Chile on 110 and Columbia on 72. It shows that Brazil and Chile are more stringent in imposing the MRLs compared to Argentina and Columbia on the import of oranges. Studies on the impact stringent CPs, other non-tariff measures, and private measures on trade exist in the literature, however, the effect of these measures on Malaysia's exports is less known.

2.7 RESPONSE STRATEGIES ADOPTED BY EXPORTERS

When faced with NTMs, exporters usually make decisions that affect their business situation. In the discussion of the behaviour of exporters when faced with NTMs, the Hirschman (1970) model has become an important literary work to be referred to. The response strategies widely adopted in the field of trade are attributed to Hirschman's study of the behaviour of individuals, members of an organisations and collective actors in the context of them facing deteriorating situations. In his study, Hisrchman (1970) derived three options as response behaviours. These three response behaviours are exit, loyalty, and voice.

According to Hirschman (1970), the exit option is pursued when outside options are available. In the case of organisations, the exit choice of the current situation seems viable when other operating environments are available. The voice response behaviour happens when organisations are faced with constraints in specific market environments but do not wish to exit. In this scenario, the organisations will voice their concerns in order to influence the constituents to improve the environment. The third option is loyalty. This option is pursued when organisations decide to withstand and comply to constraints

imposed on them by the environment that they do business. In such a context, organisations remain in business.

In adapting the Hirschman's (1970) model, Henson and Jaffee (2008) used the response strategies but included a dimension to his framework i.e. ex-ante 'proactive' behaviours (anticipating standards) or ex-post 'reactive' behaviours (waiting and adapting). For them, the 'exit' and 'reactive' combination of behaviours are considered to be the most negative options. With these dimensions added to the Hirschman's options, the behaviour options have now been expanded into six aspects which are exit-reactive, exit-proactive, loyalty-reactive, loyalty-proactive, voice-reactive and voice-proactive.

This study uses the Henson and Jaffee's (2008) model to examine the export behaviours of Malaysian exporters. Examination of the behaviour options pursued by Malaysian exporters will add to the scare literature available in this area, especially in the context of exporters from developing nations like Malaysia.

2.8 SUMMARY AND RESEARCH GAPS

NTMs have become an important agenda in international trade. The arguments put forth from various authors point towards reducing trade potential in particular exports from developing countries. However, there is evidence that NTMs do enhance trade meaning that the extent and nature of the effects of NTMs remains inconclusive. More studies are required, especially at the firm level in developing countries to strengthen the position of NTMs' impact on trade. Studies in this area are mainly based on NTMs of public nature which are classified by UNCTAD as version 12. However, those that are not classified under UNCTAD such as information asymmetry as well as culture and private standards require much attention. Research on the role of private standards of exporters in developing countries is rare and thus far, no study has been undertaken in the case of Malaysian exporters. Hence, research on the role of private standards in the case

of Malaysian exporters is significant, especially if it facilitates penetration into foreign markets. The research will also demonstrate the extent to which the private standards are superior to public standards in importing countries. This research aims to answer the following queries; Firstly, do standards help differentiate Malaysian products in foreign markets and do they provide a competitive advantage? Secondly, what are the challenges that Malaysian exporters experience and how they respond to public standards' requirements? Next, how are all these impact export decisions made and does the decision making process really matter for Malaysian exporters? Finally, which sectors are affected? To date, there are not many studies in the literature on response behaviour of export firms with respect to NTMs. In Malaysia, such an investigation has not been conducted till present time. Hence, understanding the response approach of Malaysian exporters is the key in developing a framework and creating policies to boost and enhance the export trade in Malaysia.

CHAPTER 3 : RESEARCH METHODOLOGY

3.1 INTRODUCTION

The research methodology chapter discusses the conceptual framework for the study which is explained in section 2. This section also presents the framework on strategic responses on NTMs. Section 3 covers the discussion on gravity on trade flow. Section 4 explains the survey method and the multinomial logistic regression method. The specification for the multinomial regression logistics for the empirical models for the survey data as well as the stringency computation is provided in this section. This section also continues with discussion on questionnaire design, survey administration flowchart, interviews conducted and diagnostic tests (including multicollinearity test details).

3.2 CONCEPTUAL FRAMEWORK

The conceptual framework used for this study is given in Figure 3.1. The topic of NTMs is embedded in the realm of international trade subject; hence theories on international trade become an important aspect of the NTM conceptual framework. Trade barriers in the form of protectionism have been in place and practiced since time immemorial.

The variables or the elements included in the framework are to assess the relationship between NTMs and exports. Numerous studies have examined NTMs impact on exports, including by trade organisations such as WTO and UNCTAD. However, the impact of NTMs is not fully one-sided, where the predominant view is that it affects trade negatively. Some studies have found otherwise; where NTMs enhance exports (Maskus et al., 2001; World Bank, 2005; van Tongeren et al., 2009; Neeliah et al., 2013 and Rial, 2014). As shown in the conceptual framework below, this study aims to examine NTMs' impact on exports.

Two approaches are used to examine the relations in this framework which are the gravity model and survey. The gravity model uses data from TRAINS for 2000-2013 period and the survey approach uses data collected between the period of June and December 2014 from 143 export firms in Malaysia. For the survey data, the exports are categorised into 4 levels - '25 percent and less', '26-50 percent', '51-75 percent' and 'more than 75 percent'.

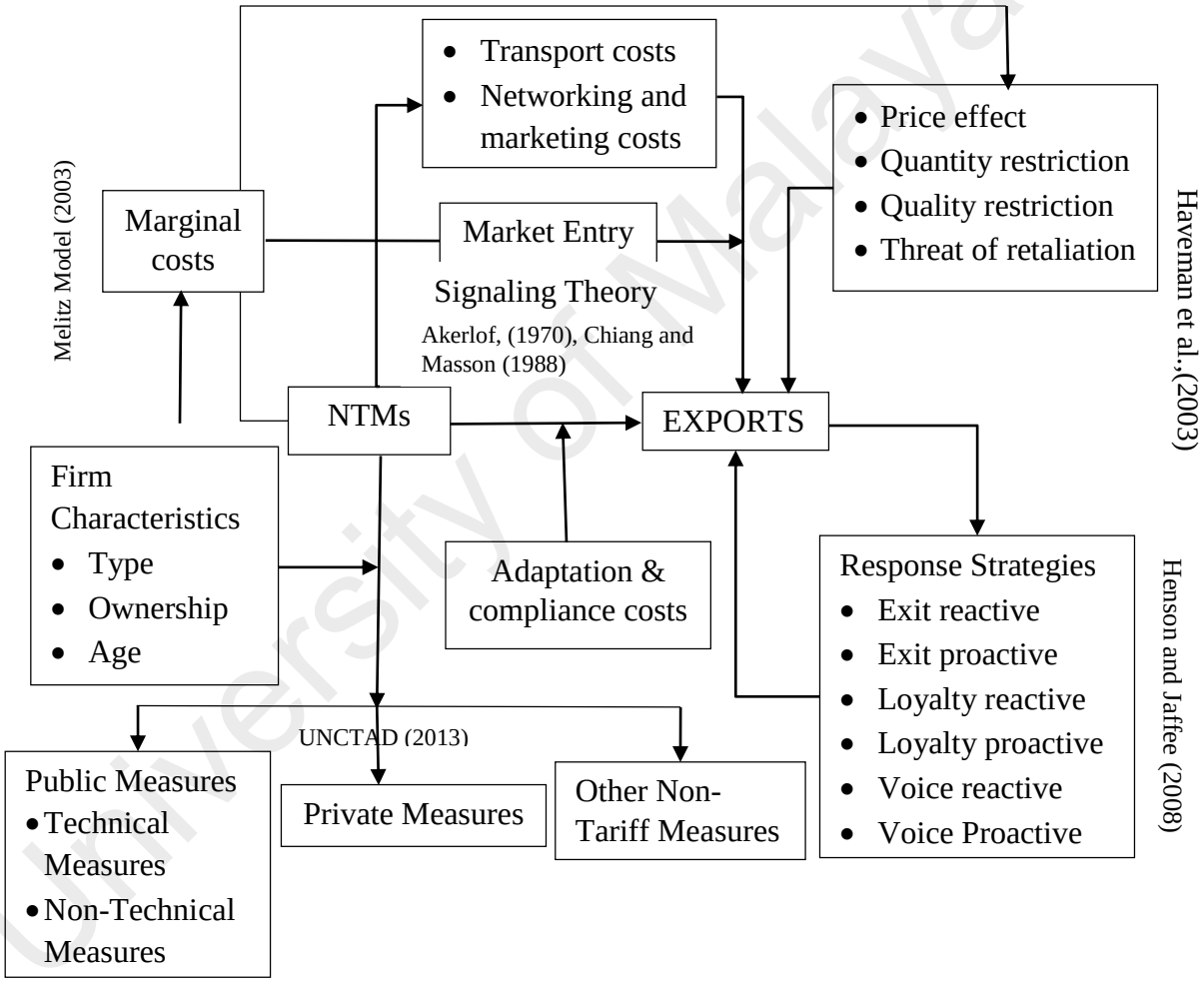

Figure 3.1: Conceptual Framework

The framework explains that NTMs could be accountable for a sharp increase in costs through transport and marketing costs (Melitz, 2003). This can be seen as the reason why some firms decide not to export. Pertaining to this, the Melitz (2003) model was developed to explain export decision at firm level. Melitz studied export decisions at the

firm level. The role of NTMs on export decisions by firms is quite clear. NTMs can incur costs to firms and consequently this effects their export decisions. The key features of Melitz's model are as follows;

i) producer of heterogeneity and fixed costs of exporting

ii) at any period of time, there are existing firms or establishments distributed over sectors, productivity, countries and export status

iii) productivity is stochastic and generates movements of establishments (or firms or plants) into and out of exporting

iv) unproductive firms also shut down

v) new establishments are created by incurring sunk cost.

The theory deals with firms deciding to export based on their marginal cost (MC) as the threshold level. If MC is higher in doing business in the domestic market, the possibility is that firms exit. When MC is higher in serving export markets and lower in domestic markets, the firms will not decide to export but remain domestic market players. Firms decide to expand into international markets when MC (marginal costs) to do business in the international markets is lower than the threshold level.

The model by Melitz helps explain the connection between the marginal costs and standards faced by exporters. Understanding the kind of responses by the exporters in facing the challenges (in the form of standards and regulations) will have significant implication on theoretical understanding of trade and trade policies. Melitz further explained how international trade can impact firms with regards to inter-firm reallocation of resources within an industry. The model explains that market trades tends to favour the more productive firms to export while those firms that are not productive are forced to exit. The model further argues that the situation of those firms that are productive and increase their exports; and those that are not and exit, leads to the reallocation of resources

towards those firms that are productive. The model also explains that more profits are achieved by firms with higher productivity.

Asymmetry in information hampers trade and creates negative effects in trade. According to Akerlof (1970), it gives rise to low quality products traded in export markets which in turn reduces the quantity traded due to low demand. Hence, exporters emphasise the importance of signalling their quality of products exported to avoid adverse market effects. Chiang and Mason (1988) showed that imperfect information (causing information asymmetry) between buyers and sellers led to consumers in export markets discriminating against products from developing countries, especially countries that lacked brand presence globally. In this regard, studies concerning information asymmetry (InfoAsym) on exports from developing countries are limited. This study aims to fill this gap by studying the effects of InfoAsym on export levels of a developing country.

Information and transparency of information on standards, specifications and requirements have significant effect on exports of a country, more so for developing countries. Trade theories seem to not have examined/studied the role of information in trade simply because it is not a NTM (with regard to UNCTAD's NTM classification). TRAINS therefore does not document exporters' concerns related to the lack of proper information to facilitate their trade. Hence, it is difficult for researchers to contribute significant findings using secondary data such as from TRAINS. This predicament therefore, can be studied only through a survey based approach.

NTMs labelling requirements are in place for exporters to inform consumers about product standards and quality. Labels inform buyers on how the product was produced including testing and certification process undergone in making a specific product. This information gives a sense of assurance to buyers about the quality of the product being sold. In the case of exporters from developing countries, they suffer from pre-conception of the product quality held by buyers especially in developed countries. Hence, these

exporters face difficulty in effectively signalling their product quality. Signalling theory also dwells on the importance of information transparency to exporters in order to conduct business in importing countries. Maertens and Swinnen (2009) and Leland (1979) implied that asymmetry in information adversely impacts exports.

Private standards of measures are not included as an NTM under UNCTAD's classification. They are also not dealt with in the TRAINS. It could be the case where information on private standards of measures may not be easily accessible. This can be a major hindrance for exporters. More empirical investigations on the private standards of measures as a trade barrier is deemed necessary. Using the Malaysian exporters' survey results as a platform, data on the effect of private standards of measures is hoped to be obtained.

The framework also includes a study by Haveman et al. (2003) on NTMs types which are price, quantity reduction, quality restrictions, and threat of retaliation. These effects are studied to identify and understand which are the NTM type faced by Malaysian exporters. As an example, the price effect is there will be an increase in price of good exporters due to increase in costs. This NTM effect could hamper exporters' competiveness in the export market. Quantity reduction could be due to imposition of quotas, as one of the measures. The reduction in quantity exported may cause exporters to face higher costs of production due to no effect of economies of scale. Hence, in this context, the exporter's price is usually higher and becomes less competitive. The quality restrictions are due to standards; both public and private standards which are imposed on exporters. They have to comply with these standards in order to market their goods. In complying to the required standards, exporters usually face increased costs, which cause the products to become more costlier when exporting to other countries. This could impede trade flow. The last NTM effect is threat of retaliation which usually happens when export markets impose serious anti-dumping laws to deter anti-dumping measures

from exporting countries. The NTM effects explained will be examined to determine which are the types faced by Malaysian exporters. This could be a significant contribution in the study of NTMs and exports especially as it concerns a developing country like Malaysia.

This research framework studies the response strategies of exporters from Malaysia when they face NTMs. The conceptual framework used to analyse the strategy pursued by Malaysian exporters upon facing NTMs is based on Hirschman's (1970) conceptual framework. It discusses three response strategy concepts which are 'exit', 'loyalty' and 'voice' in analysing the behaviours of firms facing declining situation. In this context, NTMs could be a possible cause for the 'decline situation'. Henson and Jaffee (2008) included a time dimension to the framework (see Table 3.1) to denote the existence of a time factor for compliance efforts. The time dimension inclusion to the original framework informs whether the exporters pursue the exit, loyal and voice out strategies in a reactive or proactive manner. This conceptual model is adopted in studying the response strategies pursued by Malaysian exporters.

Table 3.1: Strategic Response to NTMs (Henson and Jaffee, 2008)

	Reactive	**Proactive**
Exit	Wait for NTMs and exit	Anticipate NTM's impact and leave some markets
Loyalty	Wait for NTMs and comply	
Voice	Complain about existing and new NTMs	Participate in NTM creation and/ or negotiate before they are imposed

Table 3.1 shows three strategic response options pursued by exporters when faced with constraints in their exports in the export market. The 'exit' strategic response occurs when exporters find NTMs imposed in a particular export market is difficult to comply with and decide to exit that market. They may divert to lesser stringent markets with regards to NTMs or focus on domestic markets or in some cases leave the business.

Firms choose to be reactive and exit the market as a strategic action only when an NTM is imposed on them. They wait until the NTMs are imposed and subsequently exit the market. Some firms exit the export market before the NTMs are imposed. They anticipate the NTMs to be critical to them and decide to exit due to lack of resources and the ability to comply with the set regulations. Firms that continue to do business in the export market despite the imposition of NTMs, pursue the 'loyalty' strategic response. Being reactive or proactive, these firms continue to make their products present in the export market. Being proactive is a better option because they anticipate the NTMs to be imposed and ensure that they take necessary action to comply with the requirements ahead of time. Reactive response could be disadvantageous as it could cause delay and inefficiency to market their products in the export market.

The last option is voicing about their predicament to the regulators and authorities like WTO due to the NTMs imposed. This is when exporters are unhappy with the NTMs imposed and make known their grouses. Firms do this reactively and proactively. Reactively when they complain only regarding the NTMs imposed on them while proactively is when they protest or complain ahead of the time that the NTMs are imposed. Henson and Jaffee studied the Kenya and Indian export firms and found that all firms that exited in this instance, did so reactively. Chemnitz (2007) and Henson and Jaffee highlighted that opting for one of these various options depends on several factors which include country, market, firm levels and the requirements arising from NTMs imposed.

Control variables used in this study are firm type, size, age and firm ownership. The most common control variables used in research are firm size and age. Talebnya et al.(2009) used firm size and age as control variables to study ownership structure and firm performance of Tehran's public listed companies. Mercedes et al. (2014) also used firm size and age as control variables in their study of board characteristics and firm performance. Fu and Jia (2012) used these control variables in their study as well. According to the authors, firm size was one of the first variables to be used as a necessary control variable in studying the relationship between variables.

3.3 EMPIRICAL STRATEGY

This section explains the gravity method and multinomial logistic (MNL) as its two empirical approaches.

3.3.1 Gravity Method

Gravity model is used in this study to analyse data on NTMs derived from TRAINS. The model has been in use since 1962, where Tinbergen introduced it to measure the impact of NTMs in his seminal work (Tinbergen, 1962; Poyhonen, 1963). The model has been widely used to approximate the effects of institutions such as customs union and exchange rate mechanisms on trade flow. The model specifies an equation that measures bilateral trade flows between any two nations using the proximity and their sizes, which are represented by the GDP. Though the model is useful in explaining bilateral trade flows, it is not without criticism as it lacks a theoretical basis. Despite criticisms, the gravity model is well-suited for empirical studies and as such is noted for its suitability for policy analysis (Haris and Matyas, 1998). This is evident in many empirical studies, among which are works by Tinbergen (1962), Linnemann (1966), Aitken (1973), Thursby and Thursby (1987), Matyas (1997) and Chen and Wall (2005).

Furthermore, this method has been proven to be very important in the analysis of bilateral trade flows and has been widely used in empirical literature to explain bilateral trade and export determinants (UNCTAD, 2013 and Hatab et al., 2010). Many studies have used the gravity model with augmented variables and found that the model is relevant to explain the impact of NTM on trade flow. These studies include Martinez-Zarzoso and Nowak-Lehmann (2003), Hassan (2001), Sohn (2005), Bussiere and Schnatz (2006) and Huot and Kakinaka (2007). Deardorff (1995) has shown that the gravity model can be justified from traditional trade theories. Anderson and van Wincoop (2003) stressed that the gravity model is one of the most empirically successful trade analytical tools in economics.

For this reason, the gravity model approach is used to estimate the impact of NTMs on exports for pooled data from TRAINS for the period of 2000 – 2013. Aggregate data is used to detect the NTMs. Firstly, using secondary data, this study explores the NTM effect on overall trade in two sectors - agriculture and manufacture (industry). It is not the intent of this study to look at specific commodities within the sector which would require disaggregated trade data. This is due to the paucity of data at commodity level, hence it is inappropriate to analyse the commodity-wise effect. Gourdan (2014) noted that NTMs should be estimated using product-level trade data, but if data is rarely available or insufficient at such a level of disaggregation, estimation of the effects would be difficult. For example, data extracted from the WTO I-TIP show that from 2000-2013 , there were more than 20 commodities exported to EU. Secondly, given the large variation in the commodity type and lack of sufficient trade data, estimating the commodity-wise effects may produce results which are too dispersed thereby could weaken estimation and may mislead trade policy makers.

Thirdly, little variation is noted at product level which would contribute to multicollinearity problem. This is noted by Carerra and de Melo (2011) where the authors

argued that little variation in NTM for a given product/commodity makes identification of the effects of NTMs much more difficult. Lastly, the presence of zero trade is observed across many products exported by Malaysia. Conducting analysis with incomplete and insufficient data such as this would result in biasness in NTMs' estimates. This is noted by Martin and Pham (2015) where zero trade record is a common feature in bilateral trade data. They further observed that this was frequently seen across country-pairs and products. The authors also stated that zero trade flows can be largely seen when disaggregated trade data are used. Heteroscedasticity is also an econometric problem associated with gravity equation models. Using Poisson Pseudo-Maximum-Likelihood (PPML) method can solve the heteroscedasticity issue, but if zero trade observations are frequent, the results would still yield bias estimates. Jayasinghe et al., (2010) concurs to this, noting that PPML is not a good estimation method if excessive zeroes are present.

The basic gravity model as specified by Tinbergen (1962) and Poyhonen (1963) is as follows:

$$X_{ijt} = \alpha GDP_{it} GDP_{jt} / Dis\tan ce_{ijt} \tag{3.1}$$

Where, X_{ijt} is the value of bilateral trade between country *i* and j at time *t*. GDP_{it} and GDP_{jt} are country i and j's respective income at time t. The distance between two countries are measured by $Dis\tan ce_{ijt}$ .The α is a constant of proportionality. When equation (1) is transformed into logarithmic form, a linear model equation is given as below:

$$lnX_{ijt} = \alpha + \beta_1 ln\left(GDP_{it} GDP_{jt}\right) + \beta_2 ln\left(Dis\tan ce_{ijt}\right) + \mu_{ijt} \tag{3.2}$$

where, α, β_1 and β_2 are coefficients to be estimated. The μ_{ijt} is the error term that captures any other shocks and chance events that may affect bilateral trade between the two countries. The core gravity model equation is in line with the imperfect competition trade

model and the Hecksher-Ohlin model which argues that bilateral trade is positively related to income and negatively related to distance.

The population variable is augmented for both the export and import countries. The inclusion of distance as an explanatory variable is due to the following reasons:

i. Distance is a good measure of transport costs. Transport costs are function of the distance between trading countries. The further the distance, transport cost becomes higher leading to high trading costs. Hence, the distance variable is a proxy for transport costs. So, a negative coefficient is expected for the distance variable.

ii. Distance is a good indicator of elapsed time during shipment. Hence the variable is used in the model to measure time in transit of goods shipped. For example, for the survival intact of perishable goods, the probability is a decreasing function of time in transit.

iii. Distance variable is used to measure costs incurred to find trading opportunities and build relationships with potential trade partners.

iv. Distance variable can be used to measure the cultural proximity where the further the distance between two trading countries, the further is the cultural differences.

Over time, the basic gravity model with the natural logarithms of income, population and distance has been augmented with several other variables that account for factors that may affect trade such as real exchange rate and dummy variables for economic or custom union, common language, common boarders, or historical relationships among countries. In addition to this, the gravity model can also be used to measure the effect of government and private policies on trade flow between countries.

The basic gravity model in this study will be augmented with NTMs variables that account for factors that affect trade flow. The data on NTMs is derived from the TRAINS

database. Studies have been carried out using data from the TRAINS database (Kee et al., 2009; Anderson and Neary, 2003; Deardorff and Stern, 1997). However, it can be expected that information on NTMs is limited and one cannot expect extensive data on NTMs for Malaysia because its exporters do not frequently report the NTMs that they face. The existing data on NTMs will be used to estimate its impact on trade flow.

Most gravity models considered for the study on trade flow effect include GDP, distance and population as common variables. This study will also consider the effect of NTMs on trade flow from the industry level and exports to other regions. Hence, the basic gravity model is augmented to include these variable effects on trade flow. The following are the models that explain the above. Using the secondary data from TRAINS, the gravity model measures the industrial and agricultural sectors' influence on trade flow. The model includes these variables as shown below:

$$lnX_{ijt} = \alpha + \beta_1 lnGDP_{it} + \beta_2 lnGDP_{jt} + \beta_3 lnPOP_{it} + \beta_4 lnPOP_{jt} + \beta_5 lnDST_{ij} + \beta_6 ADJ_{ij} + \beta_7 TRF_{ijt} + \beta_8 ECR_{ijt} + \varepsilon_{ijt} \quad (3.3)$$

$$lnX_{ijt} = \alpha + \beta_1 lnGDP_{it} + \beta_2 lnGDP_{jt} + \beta_3 lnPOP_{it} + \beta_4 lnPOP_{jt} + \beta_5 lnDST_{ij} + \beta_6 ADJ_{ij} + \beta_7 TRF_{ijt} + \beta_8 ECR^{*} DAGRI_{ijt} + \beta_9 ECR^{*} DIND_{ijt} + \varepsilon_{ijt} \quad (3.4)$$

The model also measures the impact of exports to other regions. Due to the limitation of data in TRAINS, the regions measured in the model are; ASEAN, Japan and European Union. Hence the model taking on these variables are as follows:

$$lnX_{ijt} = \alpha + \beta_1 lnGDP_{it} + \beta_2 lnGDP_{jt} + \beta_3 lnPOP_{it} + \beta_4 lnPOP_{jt} + \beta_5 lnDST_{ij} + \beta_6 ADJ_{ij} + \beta_7 TRF_{ijt} + \beta_8 ECR^{*} DASEAN_{ijt} + \beta_9 ECR^{*} DEU_{ijt} + \beta_9 ECR^{*} DJPN_{ijt} + \varepsilon_{ijt} \quad (3.5)$$

where, Xijt is country i's exports to country j's in year t;

GDP = real GDP

POP = population

DST = distance between economic centres of i and j

ADJ = common border between i and j (dummy variable equal to 1 if i and j share a border and 0 otherwise)

TRF = tariff rate

ECR = export coverage ratio (used interchangeably with frequency counts, denoted as frequency counts (FC))

DAGRI = dummy variable equal to one for agricultural products (HS01-24) and 0 otherwise

DIND = dummy variable equal to one for industrial products (HS25-99) and 0 otherwise

DASEAN = dummy variable equal to one for ASEAN countries and 0 otherwise

DEU = dummy variable equal to one for EU15 countries and 0 otherwise;

ε = error term, that picks up other influences on bilateral trade

α = constant term

3.3.2 Data: Source and Summary Description

Data was sourced from the databases of UNCTAD, TRAINS and WTO. The WTO's database on NTMs is based on infrequent and incomplete notification by its members. Apart from this, data was also directly obtained from firms involved in the export trade market in Malaysia via survey. The TRAINS database provides information on NTMs which can be accessed by any interested party. The existing database is one way to identify the presence of NTMs (Bora et al., 2002). This approach is also known as the inventory approach which lists the frequency of NTMs faced by exporters. However, data on NTMs in the TRAINS is not extensive for developing countries, including Malaysia. The data, besides being insufficient, is also not consistent (CIES, 2006) rendering it difficult for any kind of analysis which according to CIES is burdensome and time consuming.

This study uses the TRAINS to derive information on NTMs and the measurements derived are frequency (F) and export coverage (EC) ratio. These measurements usually are used to provide an indication of ~~on~~ the type of NTMs employed in trade market. On the frequency ratio as a measurement method of NTMs, it has been noted that frequency (F) sometimes cannot be a good method used to measure the trade effects attributed by NTMs (OECD, 1996; Walkenhorst, 2004). It may also be subjected to aggregation biasness (Linkins and Arce, 2002) when tracing the NTMs' effects on a particular industry. The authors also noted using the frequency approach may not provide information pertaining to NTMs' effect on quantities imported, process or trade flows. Measuring the impact of NTMs using the frequency method may produce misleading information as the NTMs effects may not correlate with the estimated tariff equivalents (McGuire et al., 2002).

The EC ratio measures a country's export that is subject to a particular NTM or a particular group of NTMs (OECD, 1996). However, the coverage ratio does not measure the extent of the effect of a particular NTM on overall imports. Its effect on prices, production, consumption and import values cannot be determined as well (Clark and Zarrilli, 2001). The coverage ratio method is a widely used method (Pritchett, 1996). However, it is acknowledged that this method suffers from endogeneity problem. Therefore, to check the sensitivity of the results, the frequency counts (FC) method is used as an alternative measure. Although the coverage ratio method is criticized for not being able to detect the seriousness of NTMs, the information, nevertheless, can be exploited for establishing initial trade policy framework before getting into the specifics. For this purpose, the coverage ratio is a method that can be used with ease.

3.4 SURVEY BASED METHOD

In addition to the data collected from TRAINS, data was also collected from exporters through a survey to complement and strengthen the discussion.

3.4.1 Data From Survey on Exporters

In addition to the TRAINS database that is used to collect data on NTM incidences, a survey of NTMs imposed on exporters in Malaysia was also conducted. As evident in the discussion above, the methods used in estimating the impact of NTMs have limitations. The survey based approach is a useful way to overcome these limitations. The survey approach is adopted when other sources of information are lacking. Coupled with interviews, the survey approach can measure the effects from numerous aspects in contrast to other methods. The survey based approach provides good information on barriers faced by developing countries. For example, this approach can uncover critical information on the barriers faced by exporters in Malaysia when exporting products to United States and European countries as well as barriers faced in their own country such as administrative ones.

3.4.2 Questionnaire Design

Survey method provides first-hand information on NTMs. Laird (1996) noted that surveys can narrow the scope of information gathered regarding the NTMs. The World Bank (2008) also stressed that through surveys, information on specific NTMs faced by exporters can be obtained. The list of exporters was obtained from the Malaysia External Trade Development Corporation's (MATRADE) website. The website list of exporters was reviewed and validated for correctness of information before used in the survey. There are 23 industries or sectors listed as per Table 3.2 below;

The industries were later grouped into resource-based and non-resource-based for analysis purpose. The grouping of firms is based on national classification system for the manufacturing sector. Resource-based firms include food, beverages, and tobacco, wood products, paper products, chemicals and related industries, plastic products, petroleum products, rubber products, and non-metallic mineral products.

Table 3.2: List of Sectors

Industry/Sector		Industry/Sector	
1	Agricultural Products	13	Medical, Scientific, Measuring Equipment & Parts
2	Building Hardware, Building Supplies & Products	14	Non-Ferrous Metals Products
3	Chemicals, Petrochemicals & Pharmaceuticals	15	Photographic, Cinematographic, Video & Optical
4	Palm & Palm Kernel Oil Products	16	Rubber Products
5	Plastic Products	17	Souvenirs, Handicrafts & Giftware
6	Pulp, Paper & Paperboard Products	18	Sports Goods & Equipment
7	Clay/Sand-based & Non-Metallic Mineral Products	19	Supporting Products
8	Food & Beverage Products	20	Textile & Textile Products
9	Electrical, Electronic Product Components & Parts	21	Toys
10	Furniture Products	22	Transport Equipment, Components & Accessories
11	Iron & Steel Products	23	Wood & Wood Products
12	Machinery & Machinery Components		

Non-resource-based firms refer to textiles and apparel, basic metal, machinery, electrical and electronics, transport equipment, and others. In terms of firm size, small firms refer to establishments with full-time employees of 5 – 74 persons, medium-sized firms are those with 75 -199 employees and large firms are those with 200 or more full-time employees. Although data on sales turnover is available from the survey, firm size, as employed in the study is solely based on the number of employees that firms have. From the ownership perspective, foreign owned firms are those with more than

50 percent foreign equity. As there is no standard classification for firm experience or firm age, the firms are classified into less than 5 years in operation, 5-10 years in operation and more than 10 years in operation. Firms that are more than 10 years in existence are considered to be established or mature firms, as per the literature.

The survey comprises of two parts; the administration of the questionnaire is the first part and the second part consists of the interviews. The purpose of the interview is to explain to potential respondents about the survey which includes a briefing on NTMs as well as the importance of this survey. The survey instrument has several parts in it. These parts are explained in the table below:

Table 3.3: Parts in Questionnaire

Part 1	Introduction to the survey which includes survey purpose and importance.
Part 2	Demographic details such as the industry/sector that the firm belongs to, nature of ownership, years in operation, firm size, annual turnover, location of firm, percentage of sales exported, and major export markets.
Part 3	Notes on types of NTMs as classified by UNCTAD. Respondents are required to read this section before proceeding
Part 4	NTMs faced in export markets.
Part 5	Specific NTMs and measures.
Part 6	Information asymmetry with regard to NTMs.
Part 7	NTM types faced by exporters
Part 8	Response strategy/option.

In relation to the distribution and collection of the questionnaire, mail and online surveys or mixed-mode surveys were two data gathering techniques used in this study. The mixed-mode survey is also at times referred to as a "hybrid" survey as noted by Burns and Bush (2006). According to the authors, the mixed-mode survey approach has become a popular survey technique. The popularity of the mixed-mode surveys is due to the use of online survey research (Burns and Bush, 2006). These data gathering techniques were used to give respondents more than one option in documenting their

responses. The online option was well received by respondents due to the availability of personal computers. Simultaneously, this also helped increase response rates from respondents.

A sound understanding of the NTMs experienced or faced by exporters is important for governments and authorities to develop strategies and action plans to overcome barriers to trade. As shown in various studies, NTMs contribute significantly to trade restrictiveness across countries (Kee et al., 2009). While the official data (such as TRAINS and other databases as approved by governments) on NTMs helps in developing strategies and action plan aimed at overcoming trade barriers, the data does not contain information on specific challenges faced by firms involved in exporting (Kee et al., 2004). The exporting firms are best placed to provide information on specific challenges and barriers in their export endeavours.

The main aim of the survey in this study is to understand the NTMs faced by Malaysian exporters. The survey aims to provide valuable insights on the specific trade barriers faced by Malaysian exporters which can be used by authorities or policy makers in developing strategies, policies and action plans. As discussed in the earlier chapter, survey data complement official data to validate NTMs' effect (Basu et al., 2012). The framework used in this study to administer the survey and collect data is summarised below;

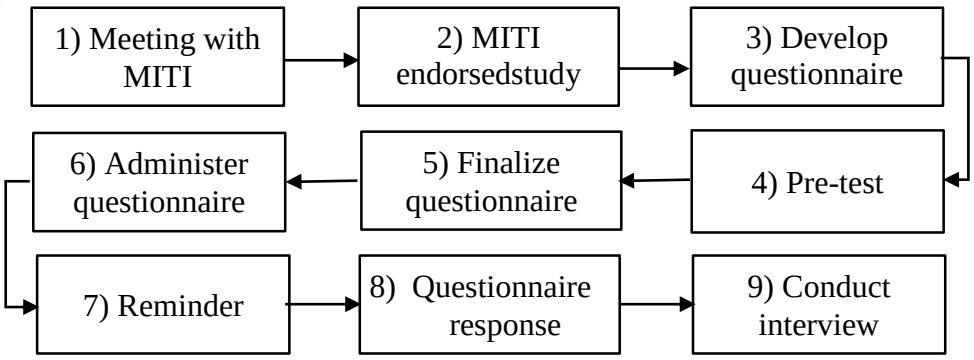

Figure 3.2: Survey Administration Framework

Upon the approval from the Ministry of International Trade and Industries (MITI), the survey questionnaires were administered. In addition, interviews were conducted with selected exporters. The results of the survey are included in chapter 6. The list of exporters was obtained from the exporters' directory from the MATRADE website. Three-hundred questionnaires were administered across sectors, however only 143 valid responses were obtained.

3.4.3 Empirical Specification

In this study, multinomial logistic regression (MLR) was used to analyse the collected data from 143 export firms through a survey. The objective of this analysis is to establish the relationship between levels of exports (dependent variables) and a number of independent variables that include stringency of NTMs, stringency of (TM), stringency of specific measures such as CPs, other non-tariff measures (ONTMs) and PMs, information asymmetry and NTM effect types. Each set of relationship is analysed against the main export markets that include the US, EU, Japan, China and ASEAN. MLR is the linear regression analysis used in the analysis of the data involving four export levels as dependent variables – '25 percent and less', '26-50 percent', '51-75 percent' and 'more than 75 percent'. These four export levels are dependent variables; thus the multinomial regression approach is best suited for this analysis. The multinomial logistic regression (MLR) model used is generally effective where the response variable (or dependent variable) is composed of more than two levels or categories.

Many studies use a categorical approach (yes or no) to determine export intensity or level. However, such an approach does not reflect a deeper understanding of the degree of export intensity. This study uses the proportion of export to sales to measure export intensity or degree of involvement which ensures validity and reliability when measuring export behaviour (Katsikeas et al., 2000). The positive aspects of using this method is

firstly, it has macroeconomic implications as it is directly related to maximisation of a country's exports (Dhanaraj and Beamish, 2003) and secondly, firms are more comfortable in sharing information on export proportion to sales than data related to net profit (Marandu, 2008).

For the dependent variable with k categories, the multinomial regression model estimates k-1 logit equations. This is because one equation will be a reference point for three other equations when comparison is done. Logits use a logarithmic function to restrict the probability values to (0, 1). Technically this is the log odds (the logarithmic of the odds of y = 1). The multinomial regression model is based on the logit function. The MNL estimates for the k-1 log odds of each category of the log linear model is as follows:

$$Logit[P(Y=1)] = \alpha + \beta_1 x_1 + \beta_2 x_2 + ...\beta_k x_k \tag{3.6}$$

Directly specifying the logit, π(x),

$$\pi(\mathbf{x}) = \frac{\exp(\alpha + \beta_1 x_1 + ...\beta_k x_k)}{1 + \exp(\alpha + \beta_1 x_1 + ...\beta_k x_k)} \tag{3.7}$$

The parameter β_i refers to the effect of x_i on the log odds that Y=1, controlling other x_j , for instance, $\exp(\beta_i)$, is the multiplicative effect on the odds of a one-unit increase in x_i, at fixed levels of other x_j. The MNL is suited to handle responses that are polytomous, i.e. taking r > 2 categories. Let π_j denote the multinomial probability of an observation falling in the j^{th} category, to find the relationship between this probability and the p explanatory variables, $X_1, X_2, ..., X_p$, the multiples logistic regression model then is:

$$\log\left[\frac{\pi_j(x_i)}{\pi_k(x_i)}\right] = \alpha_{0i} + \beta_{1j} x_{1i} + \beta_{2j} x_{2i} + ...\beta_{pj} x_{pi} \tag{3.8}$$

Where j = 1.2,…, (k-1), i = 1,2,...,n. Since all the π 's add t unity, this reduces to:

$$\log\left(\pi_j(x_i)\right) = \frac{\exp(\alpha_{0i} + \beta_{1j}x_{1i} + \beta_{2j}x_{2i} + \ldots\beta_{pj}x_{pi}}{1 + \sum_{j=1}^{k-1}\exp(\alpha_{0i} + \beta_{1j}x_{1i} + \beta_{2j}x_{2i} + \ldots\beta_{pj}x_{pi}} \quad (3.9)$$

for j = 1,2,… (k-1), the model parameters are estimated by the method of MNL. Statistical software is used to do this fitting.

Each model or equation consists of explanatory control variables; firm type, firm ownership, firm age as well as firm size, one explanatory core variable and one dependent variable that has four categories. The explanatory core variables are stringency of NTM, stringency of TM, stringency of CPs, stringency of other non-tariff measures (ONTMs), stringency of PMs and information asymmetry (InfoAsym). The dependent variable for each model has four categories - '25 percent and less', '26-50 percent', '51-75 percent' and 'more than 75 percent'. The 'more than 75 percent' is the reference group in the multinomial logistics regression analysis. The following model is specified for control, core and dependent variables:

$$Y_{1\text{-}4} = \alpha + \beta_1 FIRMTYPE + \beta_2 FIRMOWNERSHIP + \beta_3 FIRMAGE + \beta_4 FIRMSIZE + \beta_5 CorVar \quad (3.10)$$

Where Y_{1-4} is for Y_1= '25 percent and less' export level, Y_2 = '26-50 percent' export level, Y_3= '51-75 percent' export level and Y_4 = 'more than 75 percent' export level. CoreVar is core variable that is specified for each model which includes stringency of NTMs (denoted by STRNTM), stringency of TMs (denoted by STRTM), stringency of CPs (denoted by STRCP), stringency of ONTMs (denoted by STRONTM), stringency of PMs (denoted by STRPM) and information asymmetry (denoted by InfoAsym).

The stringency index is calculated based on the research done by Melo et al. (2014). Based on the exporters' perception of the various core variables on a 5- point Likert scale (for a NTM, 1 is not stringent and 5 is very stringent), a stringency index is calculated on a simple average of the stringency perception. For core NTM variables,

there are 16 dimensions under the technical and non-technical measures. A simple average of the stringency perceptions, r^n of the 16 NTM dimensions is calculated. Against each export market, the simple average of the stringency perceptions of the NTM dimensions is given as r_i^n, where i is the export destination. The stringency index (SINDEX) computation is given as below:

$$SINDEX_{it} = \frac{1}{16}\sum_{n-1} x_t^n \, r_i^n \tag{3.11}$$

where, x_t^n is the stringency of a NTM at reported time.

The same approach of calculating the stringency index is used for other core variables; i) TMs, ii) CPs, iii) ONTMs, iv) PMs and v) information asymmetry (InfoAsym) against export levels; and stringency of NTM types.

Hence, the equation for each core variable is given below;

$$Y_{1\text{-}4} = \alpha + \beta_1 FIRMTYPE + \beta_2 FIRMOWNERSHIP + \beta_3 FIRMAGE + \beta_4 FIRMSIZE + \beta_5 STRNTM \tag{3.12}$$

$$Y_{1\text{-}4} = \alpha + \beta_1 FIRMTYPE + \beta_2 FIRMOWNERSHIP + \beta_3 FIRMAGE + \beta_4 FIRMSIZE + \beta_5 STRTM \tag{3.13}$$

$$Y_{1\text{-}4} = \alpha + \beta_1 FIRMTYPE + \beta_2 FIRMOWNERSHIP + \beta_3 FIRMAGE + \beta_4 FIRMSIZE + \beta_5 STRCP \tag{3.14}$$

$$Y_{1\text{-}4} = \alpha + \beta_1 FIRMTYPE + \beta_2 FIRMOWNERSHIP + \beta_3 FIRMAGE + \beta_4 FIRMSIZE + \beta_5 STRONTM \tag{3.15}$$

$$Y_{1\text{-}4} = \alpha + \beta_1 FIRMTYPE + \beta_2 FIRMOWNERSHIP + \beta_3 FIRMAGE + \beta_4 FIRMSIZE + \beta_5 STRPM \tag{3.16}$$

$$Y_{1\text{-}4} = \alpha + \beta_1 FIRMTYPE + \beta_2 FIRMOWNERSHIP + \beta_3 FIRMAGE + \beta_4 FIRMSIZE + \beta_5 INFOASYM \tag{3.17}$$

The control and NTM core variables are also analysed for each export market. The five export markets in this study are the US, European Union (EU), Japan, China, and ASEAN. These countries were chosen to understand the effect of the NTMs in the

export market. However, information asymmetry is not considered as an NTM under the UNCTAD 2012 classification. The core variables are examined against each export level. The equation for each NTM core variable in each export market is given below:

$$Y_{1\text{-}4} = \alpha + \beta_1 FIRMTYPE + \beta_2 FIRMOWNERSHIP + \beta_3 FIRMAGE + \beta_4 FIRMSIZE + \beta_5 STRCoreVarExM_{US,EU,Japan,China,ASEAN} \quad (3.18)$$

Where the StrCoreVarEM is the stringency of core NTM variable in an export market (ExM). The ExM includes, the US, EU, Japan, China, and ASEAN. Hence, the equations for the above are stated as below;

$$Y_{1\text{-}4} = \alpha + \beta_1 FIRMTYPE + \beta_2 FIRMOWNERSHIP + \beta_3 FIRMAGE + \beta_4 FIRMSIZE + \beta_5 STRNTM_{US,EU,Japan,China,ASEAN} \quad (3.19)$$

$$Y_{1\text{-}4} = \alpha + \beta_1 FIRMTYPE + \beta_2 FIRMOWNERSHIP + \beta_3 FIRMAGE + \beta_4 FIRMSIZE + \beta_5 STRTM_{US,EU,Japan,China,ASEAN} \quad (3.20)$$

$$Y_{1\text{-}4} = \alpha + \beta_1 FIRMTYPE + \beta_2 FIRMOWNERSHIP + \beta_3 FIRMAGE + \beta_4 FIRMSIZE + \beta_5 STRCP_{US,EU,Japan,China,ASEAN} \quad (3.21)$$

$$Y_{1\text{-}4} = \alpha + \beta_1 FIRMTYPE + \beta_2 FIRMOWNERSHIP + \beta_3 FIRMAGE + \beta_4 FIRMSIZE + \beta_5 STRONTM_{US,EU,Japan,China,ASEAN} \quad (3.22)$$

$$Y_{1\text{-}4} = \alpha + \beta_1 FIRMTYPE + \beta_2 FIRMOWNERSHIP + \beta_3 FIRMAGE + \beta_4 FIRMSIZE + \beta_5 STRPM_{US,EU,Japan,China,ASEAN} \quad (3.23)$$

Apart from analysing the core NTM variables, this study also investigates InfoAsym on the export level. Though the InfoAsym is not listed as a NTM measure under the UNCTAD 2012 classification, its importance for the export market has been widely discussed. Hence, this variable is examined with regards to the four export levels. With the explanatory control variables - firm type, firm ownership, firm age and firm size, the model for this core variable (InfoAsym) is as restated below;

$$Y_{1\text{-}4} = \alpha + \beta_1 FIRMTYPE + \beta_2 FIRMOWNERSHIP + \beta_3 FIRMAGE + \beta_4 FIRMSIZE + \beta_5 INFOASYM \quad (3.17)$$

The InfoAsym is then analysed against each export market as stated in the equation below;

$$Y_{1\text{-}4} = \alpha + \beta_1 FIRMTYPE + \beta_2 FIRMOWNERSHIP + \beta_3 FIRMAGE + \beta_4 FIRMSIZE + \beta_5 INFOASYM_{US,EU,Japan,China,ASEAN} \quad (3.24)$$

Through the survey, the NTM types faced by exporters are studied. There are four NTM types that include the price effects, quantity reduction, quality restrictions and threat of retaliation (reference group) that could be faced by exporters (Haveman et al., 2003). The stringency of NTM is analysed.

As for the other models, the explanatory control variables - firm type, firm ownership, firm age, firm size were included with the stringency of NTM variable (denoted by STRNTM) against the NTM types.

In examining the NTM types faced by Malaysian exporters, the following empirical models are specified;

$$Z_{1\text{-}4} = \alpha + \beta_1 FIRMTYPE + \beta_2 FIRMOWNERSHIP + \beta_3 FIRMAGE + B_4 FIRMSIZE + \beta_5 STRNTM \quad (3.25)$$

Here, Z_{1-4} refers to NTM types whereby Z_1 refers to price effects, Z_2 is quantity reduction, Z_3 is quality restrictions and Z_4 is threat of retaliation. These NTM types are examined for each market. The empirical model is shown below;

$$Z_{1\text{-}4} = \alpha + \beta_1 FIRMTYPE + \beta_2 FIRMOWNERSHIP + \beta_3 FIRMAGE + \beta_4 FIRMSIZE + \beta_5 STRNTM_{US,EU,Japan,China,ASEAN} \quad (3.26)$$

3.4.4 Interviews

Interview sessions were carried out to collect information on NTMs faced by exporters. A total of 20 exporters were interviewed. The firms' breakdown includes 11 small sized firms, six medium-sized firms, and three large-sized firms. The proportion of the type of business is 60 percent resource-based firms and 40 percent non-resource-based firms. The firms were selected from a list of 300 contactable exporters. Each firm was contacted to seek permission for a telephone interview session which would last not more

than 17 minutes. Only 20 exporters agreed for the interview session and the date and time for the session were agreed upon after discussion.

3.4.5 Diagnostic Tests

Diagnostics tests used in the MNL analysis of data are discussed in this section. First, is the deviance or -2 log likelihood (-2LL) statistic. The deviance is a measure of how much unexplained variation there is in a logistic regression model; the higher the value, the less accurate the model. A model fit requires the value to be significant. This would then denote that there is a relationship between the dependent variable and the combination of independent variables. The second test is the Pseudo-square. According to McFadden (1973), values of a Pseudo-square ranging from 0.2 to 0.4, are considered "highly satisfactory." With regards to sample size, Schwab (2002) indicates that for multinomial logistic regression, a minimum of 10 cases per independent variable is required.

Third, the reliability test was conducted. The question of reliability addresses the issue of whether a research instrument, for example, a questionnaire, will produce the same results each time it is administered to the same person in the same setting. Reliability analysis measures the overall consistency of the items in the questionnaire. It is designed as a measure of the internal consistency, i.e. do all items within the instrument measure the same thing? Internal consistency is estimated by determining the degree to which each item in an instrument correlates with every other item. It is measured on the same scale as a correlation coefficient and its value lies between 0 (no internal consistency) and 1 (perfect internal consistency).

Cronbach's alpha is the most common measure of internal consistency ("reliability"). As a rule of thumb, internal consistency is considered excellent if the alpha value exceeds 0.9, good if it exceeds 0.8, acceptable if it is greater than 0.7, questionable if it between 0.6 and 0.7, poor if it is between 0.6 and 0.5 and unacceptable if it is smaller

than 0.5 (George and Mallery, 2001). SPSS conducts the reliability analysis with ease. The most important table is the Reliability Statistics table that provides the actual value for Cronbach's alpha. The Cronbach's alpha is 0.975, which indicates a high level of internal consistency for the scale with the sample size of 143.

Multicollinearity test was the fourth diagnostic test conducted. The independent variables in the models are tested for multicollinearity using the Variance Inflation Factor (VIF) statistics. VIF is commonly used to test for multicollinearity (Elango, 2003). As a rule of thumb, when VIF is less than 10, multicollinearity is not a concern (Burns and Bush, 2000). In the case of this study's independent variables for various models, all have VIF far less than 10. The VIF varied between 1.018-1.921. As a result, multicollinearity is not an issue for this study. Details of the multicollinearity test are provided in Appendix B.

CHAPTER 4 : NON-TARIFF MEASURES AND EXPORTS

4.1 INTRODUCTION

Understanding the impact of NTMs on Malaysia is interesting because it is a highly trade dependent, non-agriculture based economy with high export concentrations in terms of both products and markets. Market access has already emerged as a critical item on the national agenda. To set the background of the study, this chapter details market access in major export destinations for Malaysia, the European Union, Japan and the Association of Southeast Asian Nations (ASEAN).

The rest of this chapter is organised as follows. Section 2 provides an overview of the NTMs on Malaysian shipments to major export markets based on the magnitude and structure of the NTMs. Section 3 presents the econometric specification employed in this study, it describes the data, and provides definitions as well. Section 5 details the empirical results, while section 6 summarises the key findings.

4.2 NTM COVERAGE IN MAJOR EXPORT DESTINATIONS

Table 4.1 illustrates the dependency of Malaysia's exports on the markets of the EU, Japan and ASEAN 4. All three markets comprise a substantial percentage of total Malaysian exports, with the ASEAN 4 commanding the highest export share. In terms of products traded, the corresponding shares in Malaysian exports of agriculture to the three major markets remain lower than that for industry, as Malaysia is predominantly an industry based exporter. Agricultural products only accounted for about 11 percent of total exports in 2013.

Table 4.1: Export Shares in Major Destinations, 2000-2013 (in percent)

Country/ Group	Agriculture			Industry			Total Exports		
	2000	2007	2013	2000	2007	2013	2000	2007	2013
EU	11.93	12.55	8.63	13.78	11.98	8.46	13.68	12.03	8.47
Japan	5.39	4.69	3.85	13.53	9.65	11.92	13.07	8.79	9.84
ASEAN4	22.82	15.80	17.70	25.66	24.59	26.34	25.48	23.81	25.41
TOTAL	**40.14**	**33.04**	**30.18**	**52.97**	**46.22**	**46.72**	**52.23**	**44.63**	**39.47**
Share in Total Malaysian Exports	**5.26**	**8.71**	**10.54**	**94.74**	**91.29**	**89.46**	-	-	-

Notes: 1. Agriculture refers to HS 01-24 and Industry to HS 25-99.
2. The export shares for agriculture and industry refer to shares of the total agricultural Exports of Malaysia and total industrial exports of Malaysia respectively.
Source: Calculated from UNCOMTRADE.

That Malaysian exports are largely industry based is a crucial point to note when examining the effects that NTMs have on trade. Most of the SPS measures, which have a narrower focus than TBT (Kelly, 2003), are imposed on food and agricultural products. Therefore, a focus on SPS measures per se may not sufficiently capture the degree of trade restrictiveness on Malaysian exports because TBT and other measures that relate to non-risk reducing measures such as product compatibility, quality attributes and conservation issues are relevant for both agricultural and non-agricultural products (see also Fliess and Lejarraga, 2004) on how TBTs are the leading concern for developing countries.

The three major markets in Table 4.1 are not only key export destinations for Malaysian products, but are also countries that have actively notified the WTO. These notifications provide advanced warning of new or modified measures and an opportunity for trading partners to raise questions or objections to the proposed measures (Jaffee and Henson 2004). The number of notifications by the ASEAN 4 and Japan to the WTO for the period of 2000- 2013 were 27, 160 (calculated from the online SPS-IMS and TBT-IMS portal). The high cumulative number of notifications from the ASEAN 4 vis-à-vis the other countries/groups plausibly signals an increase in regulatory activity. Most of the notifications fall under the TBT agreement. However, the EU measures are considered

stringent and exporters from the developing world are highly affected by them (Maskus et al., 2001; Disdier et al., 2008).

While the notifications mentioned above are not specific to Malaysia, bilateral data is available on notifications and the detention of export consignments of agricultural and food products from Malaysia to the EU. The information, sourced from the Rapid Alert System for Food and Feed (RASFF) portal, is useful because it is widely acknowledged that traders in agricultural and food products are susceptible to NTMs (Henson and Loader, 2001). The EU is at the forefront of stringent food safety standards and regulations (Rokiah, 2009) due to the harmonisation process for such measures between the member states. More importantly, RASFF also provides reasons for the notifications and the detention of the consignments.

A total of 47 notifications on Malaysian exports were filed by the EU from 2000-2010. Most were classified as border rejections[1] (21 notifications), while the remainders were either alert or information[2] notifications. The majority of the notifications originated from UK (17 notifications), followed by Italy as a distant second. The rejection of export consignments is not limited to the value of the product, per se, but includes transportation and other export costs which are incurred by the exporter (Otsuki et al., 2001; Henson and Loader, 2001; Athukorala and Jayasuriya, 2003). From 2002-2010, the number of rejections by EU on agriculture based food products from Malaysia is 136 (UNIDO, 2015). The reasons for the notifications regarding Malaysia's consignments filed by the EU, based on the RASFF portal, are contamination in the form of organic and chemical compounds, the presence of bacteria, food additives that are unauthorised and prohibited

1. Border rejection relates to consignments that have been tested and rejected at the external borders of the EU when a health risk is found. The notifications are transmitted to all European Economic Area (EEA) border posts to reinforce controls and to ensure that the rejected product does not re-enter the Community through another border post.

2.Alerts are triggered by the member state that detects the problem, and immediate action is taken to withdraw or recall the product. Information notification is performed when a risk is identified in a consignment, but member states do not have to take immediate action because the product has not reached their markets.

substances in the form of specific drugs and antibiotics. The contaminants were principally found in fish and fish products, poultry, fats and oils (affecting whole milk and palm oil exports). For example, in 2008, the exporters of seafood products from Malaysia faced the prospect of a ban from the EU due to some Malaysian fishing vessels and seafood processing procedures which failed to comply with EU standards (Zahaitun, 2008).

Malaysian exporters have also voiced their concerns over the phytosanitary controls for fresh fruit (SIRIM, 2005). Specifically, the SPS measure regarding pesticide residue on fruits is considered difficult (as it is more stringent than International Codex Standards) and costly for exporters to comply to as the maximum residue levels are set at the limit of detection. This is a problem for tropical fruits. Products such as fish, meat, fruits and vegetables are typically subject to extensive control in the EU (Henson and Loader, 2001). It appears at this stage, based on the reasons for notification and detention of Malaysian exports to the EU, that the major problem lies in meeting basic food hygiene requirements (Athukorala and Jayasuriya, 2003).

Apart from barriers to export consignments of food and agricultural products from Malaysia, recent selected episodes of export disruption indicate specific labelling problems in food and natural resources such as timber and biodiesel. In the context of labelling based on production, processes and methods (standards for product harvesting), Austria has trade measures that may discriminate against timber imports from Malaysia on similar labelling grounds. There are also growing prospects for other European government mandating schemes, such as eco-labels, which indicate the point of origin or the nature of forestry management. The Dutch government has already mandated labelling on imported timber. At present, a 'Voluntary Partnership Agreement (VPA)[3],'

3. This requirement is also considered problematic because it could alter Malaysia's WTO rights.
. However, the VPA is important for Malaysia given that the EU is scheduled to adopt the Due Diligence Regulation in 2011 that will prohibit illegally sourced timber from entering the bloc.

which permits the ban of imported forest products to the EU if EU customs officials decide that measures in the exporting countries to verify the legality of the product (which already exists) are not adequate, is being negotiated with Malaysia. Another issue related to timber that has affected Malaysian exporters is Directive 67/548/EEC that adopts a hazard classification system for substances in timber products that are considered dangerous, namely, boric acid.

A related issue is the mandated sustainability criteria related to emissions and land use for the cultivation of biofuels. Allegations have recently been made by a Dutch non-governmental organisation (NGO) regarding the emissions from forest and peat swamp areas which have been converted into palm oil plantations in Malaysia.

Apart from exports of food and natural resources, the EU's guidelines based on the principle of producer's responsibility that deals with end-of-life environmental impacts have also affected manufacturers of electrical and electronic (E&E) products. In 2002, the EU enforced a guideline on wastes [Waste Electrical and Electronic Equipment (WEE) Directive 2002/96/EC] from the E&E industry, which stipulates the responsibilities that producers and exporters have for the treatment, recovery and disposal of related equipment. Similarly, another directive (the Restrictions on Hazardous Substances (RoHS) directive was put in place to restrict the use of certain substances, which subsequently affected manufacturers, sellers, distributors and recyclers. Both requirements were transmitted through the supply chain (Vossenaar et al., 2006), and eventually the small and medium enterprises (SMEs) in Malaysia bore the brunt of the high costs of compliance (MITI, 2006).

The selected cases of export disruption (primarily regarding the EU) described above highlight the importance of not only examining the incidence of NTMs, which varies distinctly across product groups and markets, but to also identify the product concentration of Malaysian exports in major destinations and the stringency of those

destinations in terms of the number and types of NTMs imposed. Table 4.2 presents the export coverage of NTMs on Malaysian consignments in major destinations for both agricultural and industrial products.

Table 4.2: Coverage of NTMs for Malaysian Exports in Major Destinations

Type of Measure	No. of Measures			Export Coverage (percent)		
	A	I	Total	A	I	Total
EU (2007)						
Quantity Control	509	61	570	12.57	13.83	13.67
Technical	659	120	779	25.31	36.28	17.43
TOTAL	1168	181	1349	12.64	15.81	15.38
Japan (2009)						
Para-Tariff	524	322	846	3.84	22.41	20.73
Quantity Control	532	9	541	1.95	4.60	3.95
SPS	17442	3715	21157	4.57	11.07	10.28
TBT	2168	10705	12873	4.18	10.79	10.12
TOTAL	20666	14751	35417	4.10	12.03	10.87
Singapore (2001)						
Automatic Licensing	18	6	24	7.03	8.19	7.27
Quantity Control	93	109	202	14.62	18.35	18.09
Monopolistic	1	13	14	56.15	17.96	18.53
Technical	182	84	266	16.25	19.76	18.23
TOTAL	294	212	506	16.27	18.40	18.23
Thailand (2008)						
SPS	299	8	307	5.69	0.31	5.67
TBT	0	601	601	-	5.28	5.28
Other Technical	32	1	33	3.84	0.31	3.84
TOTAL	331	610	941	4.94	5.28	5.27
Philippines (2008)						
Para-Tariff	64	101	165	1.59	1.49	1.47
Quantity Control	120	175	295	1.59	1.49	1.47
Anti-Competitive	1	2	3	1.30	1.44	1.42
SPS	779	42	821	1.59	0.73	0.98
TBT	19	408	427	3.14	1.46	1.49
Other Technical	17	-	17	1.29	-	1.29
TOTAL	1000	728	1728	1.59	1.39	1.42
Indonesia (2007)						
Para Tariff	55	4	59	8.54	7.77	8.28
Automatic Licensing	12	117	129	14.66	1.22	1.29
Quantity Control	73	666	739	7.86	2.92	3.04
Monopolistic	6	24	30	11.48	6.90	6.96
Technical	185	195	380	2.40	1.30	1.45
TOTAL	331	1006	1337	4.38	2.36	2.48

Notes: 1. The NTMs are examined from the Malaysian perspective as an exporter.
2. A – agriculture; I – industry
Source: Calculated from WITS and UNCOMTRADE.

The first striking observation from Table 4.2 is the substantial number of NTMs imposed in Japan in relative to other countries. The number of SPS measures for agricultural products and the number of TBT measures for industrial products is astoundingly high in Japan. Nevertheless, the ECR for SPS is only 5 percent for Malaysian agricultural products, whereas measures for TBT for industrial products is more than double at 11 percent. In contrast, the EU only has a few principal types of NTMs relative to Japan. This should not be misinterpreted as lower degree of restrictiveness in the EU market vis-à-vis Japan for the following reasons. Firstly, the ECR of all NTMs for Malaysian products is obviously higher in the EU than Japan. The larger coverage of NTMs for Malaysian industrial export consignments are relative to agricultural products, despite the greater number of measures instituted on agricultural products. The table further illustrates that the number of NTMs *per se* is not an indication of the severity of an export barrier. Secondly, it may be more difficult to surmount a single barrier than multiple NTMs if the former is imposed with greater intensity.

Among the three ASEAN member countries listed in Table 4.2, the ECR of NTMs for Malaysian consignments is highest for Singapore. Despite the wide variety of NTMs in the Philippines, the coverage ratio is relatively small for Malaysian exports. Given that there are no reported NTMs in the WITS database for Indonesia, the ECR is further derived from the ASEAN database for ASEAN 4 and presented in Table 4.3. Large discrepancies are noted in the number and type of measures instituted in the ASEAN 4 between the WITS database and the ASEAN database respectively. However, the coverage ratios for Malaysia's trade with Singapore, Thailand and the Philippines is derived using the WITS database which produced relatively similar results to those using the ASEAN database. Based on Table 4.3, Indonesia appears to have the highest number of NTMs and multiple categories, but the coverage ratio for Malaysian consignments to Indonesia remains low.

Table 4.3: Coverage of NTMs for Malaysian Exports in ASEAN 4

Type of Measure	Number of Measures			Export Coverage (percent)		
	A	I	Total	A	I	Total
Singapore (2006)						
Para-Tariff	2	17	19	18.03	20.27	20.24
Automatic Licensing	59	31	90	36.09	20.82	21.13
Quantity Control	26	239	265	46.62	19.31	19.47
Technical	9	70	79	29.99	16.78	16.86
TOTAL	96	357	453	34.32	18.78	18.94
Thailand (2007)						
Automatic Licensing	-	38	38	-	5.61	5.61
Quantity Control	33	44	77	1.90	5.20	4.84
Technical	75	21	96	2.23	7.29	4.51
TOTAL	108	103	211	2.07	5.47	5.03
Philippines (2007)						
Para-Tariff	12	-	12	1.92	-	1.71
Quantity Control	40	26	66	1.26	1.47	1.47
Technical	7	214	221	0.32	1.56	1.55
TOTAL	59	240	299	1.28	1.52	1.51
Indonesia (2007)						
Para-Tariff	55	4	59	8.54	7.77	8.28
Automatic Licensing	12	117	129	14.66	1.22	1.29
Quantity Control	73	666	739	7.86	2.92	3.04
Monopolistic	6	24	30	11.48	6.90	6.96
Technical	185	195	380	2.40	1.30	1.45
TOTAL	331	1006	1337	4.38	2.36	2.48

Notes: 1. The NTMs are examined from the Malaysian perspective as an exporter.
2. A – agriculture; I – industry
Source: Calculated from ASEAN database

It is likely that exports from different product groups may be disproportionately affected by NTMs in the importing countries, depending on the export concentration in those markets. In the case of agricultural products, the EU commands a relatively large market share of Malaysian exports of HS13 (lac, gums, resin, other vegetable saps and extracts) and HS23 (residues and waste from the food industry and prepared animal fodder), while Japan dominates consumption of HS06 (live trees and other plants, bulbs, roots, and cut flowers). In 2013. EU imported almost 20 percent of the total fats and oils products from Malaysia. Within the ASEAN4, market concentration by product groups is not apparent in Malaysia's agricultural trade with Thailand and the Philippines. In

contrast, high levels of export concentration in Malaysia's agricultural trade with Singapore are noted in the following: HS01 (live animals), HS04 (dairy products, bird's eggs, natural honey, and edible products), HS07 (edible vegetables, certain roots and tubers), HS08 (edible fruits and nuts, the peels of citrus fruit and melons) and HS10 (cereals). For Indonesia, Malaysia's export concentration is only high for HS12 (oil seeds, oleage fruits, miscellaneous grains and seed fruits) products.

As for industrial products, not all exports with high levels of market concentration are subject to NTMs in the importing country. Therefore, the export concentrations of products in the following categories are only mentioned when at least one type of NTM has been instituted by the importing country. In the case of trade with the EU, the export concentration for Malaysian industrial products is considerably high for HS64 (footwear, gaiters, and the like, parts of such articles). Similarly, for the industrial trade with Japan, high levels of market concentration are found for HS51 (wool, fine/coarse animal hair, horsehair yarn and fabric), HS70 (glass and glassware) and HS81 (other base metals, cements, and articles thereof). Within the ASEAN4, although there are several products traded between Malaysia and Singapore that display high levels of export concentration, only HS25 (salt, sulphur, earth, and stone, plastering materials, lime and cement) and HS71 (natural/cultured pearls, precious stones and metals and coins) are subject to NTMs. In the remaining ASEAN member countries, only HS58 (special woven fabric, tufted textile fabric, lace and tapestries) products from Malaysia, which are subject to NTMs in Indonesia, are highly concentrated in that market.

There are strong variations in NTM coverage by type of measure, commodity, and importing country. However, the ECR derived in this section and the export concentrations of products and markets only provide information on the potential trade impact of NTMs, while the empirical results in the following section capture the direction and the magnitude of the impact that NTMs have on Malaysian exports.

4.3 IMPACT OF NTMs ON MALAYSIAN EXPORTS

4.3.1 Econometric Specification

This chapter uses an ex-post approach, employing a gravity-based econometric model to analyse the overall impact of NTMs on Malaysian exports, and to separate the impacts by product group and importing country. The basic equation is augmented and the following equations are estimated in log linear form (refer to chapter 3):

$$lnX_{ijt} = \alpha + \beta_1 lnGDP_{it} + \beta_2 lnGDP_{jt} + \beta_3 lnPOP_{it} + \beta_4 lnPOP_{jt} + \beta_5 lnDST_{ij} + \beta_6 ADJ_{ij} + \beta_7 TRF_{ijt} + \beta_8 ECR_{ijt} + \varepsilon_{ijt} \quad (3.3)$$

$$lnX_{ijt} = \alpha + \beta_1 lnGDP_{it} + \beta_2 lnGDP_{jt} + \beta_3 lnPOP_{it} + \beta_4 lnPOP_{jt} + \beta_5 lnDST_{ij} + \beta_6 ADJ_{ij} + \beta_7 TRF_{ijt} + \beta_8 ECR * DAGRI_{ijt} + \beta_9 ECR * DIND_{ijt} + \varepsilon_{ijt} \quad (3.4)$$

$$lnX_{ijt} = \alpha + \beta_1 lnGDP_{it} + \beta_2 lnGDP_{jt} + \beta_3 lnPOP_{it} + \beta_4 lnPOP_{jt} + \beta_5 lnDST_{ij} + \beta_6 ADJ_{ij} + \beta_7 TRF_{ijt} + \beta_8 ECR * DASEAN_{ijt} + \beta_9 ECR * DEU_{ijt} + \beta_9 ECR * DJPN_{ijt} + \varepsilon_{ijt} \quad (3.5)$$

where X_{ijt} is country *i*'s (reporter) exports to country *j* (partner) in year *t*. The other variables are defined below:

GDP = real GDP

POP = population

DST = distance between economic centres of *i* and *j*

ADJ = common border between *i* and *j* (dummy variable equal to one if *i* and *j* share a border and 0 otherwise)

TRF = tariff rate

ECR = export coverage ratio (used interchangeably with frequency counts, denoted as FC)

DAGRI = dummy variable equal to one for agricultural products (HS01-24) and 0 otherwise

DIND = dummy variable equal to one for industrial products (HS25-99) and 0 otherwise

DASEAN = dummy variable equal one to for ASEAN countries and 0 otherwise

DEU = dummy variable equal to one for EU15 countries and 0 otherwise

DJPN = dummy variable equal to one for Japan and 0 otherwise

ε = error term that picks up other influences on bilateral trade

α = constant term.

4.3.2 Results and Discussion

Table 4.4 presents the results of the pooled Ordinary Least Squares (OLS) and Random Effects (RE) models. The Breusch-Pagan (1980) Lagrange Multiplier (LM) test is employed to determine whether RE Generalised Least Squares (GLS) is appropriate and the simple pooling can be rejected. The LM statistics are overwhelmingly significant and support the appropriateness of the panel GLS model for all specifications. The RE estimator is also chosen for the following reasons, despite the fact that the Fixed Effects (FE) estimator is much more common in gravity models than the RE estimator (Egger, 2000). The RE estimator has the advantage of not requiring the exclusion of variables that are time invariant. In this case, both the distance (DST_{ij}) and contiguity (ADJ_{ij}) variables are invariant across time periods, and these variables are of considerable interest to this study. Furthermore, all of the variables exhibit more variation in the data across country-pair-HS product groups (between variation) than over time (within variation). This is not surprising given the large number of cross-section entities (based on country-pair-HS product groups) used for the estimations, which are believed to have some influence on bilateral exports. As such, an FE may not work well for data with minimal within variation or for variables that change slowly over time.

Table 4.4: Panel Gravity Estimates for Malaysian Exports (using coverage ratios)

Variables	(1)	(2)	(3)
lnGDP_i	3.099	3.064	3.323
	(4.508)	(4.518)	(4.513)
lnGDP_j	0.982***	1.124***	1.106***
	(0.121)	(0.120)	(0.128)
lnPOP_i	-13.634	-13.854	-14.856
	(10.827)	(10.861)	(10.854)
lnPOP_j	0.936***	0.874***	0.894***
	(0.102)	(0.101)	(0.100)
lnDST_{ij}	-2.612***	-2.950***	-2.997***
	(0.244)	(0.239)	(0.259)
ADJ_{ij}	-0.627	-1.122*	-0.1.138*
	(0.620)	(0.618)	(0.665)
TRF_{ij}	-0.028	-0.027	-0.029
	(0.020)	(0.020)	(0.019)
ECR_{ij}	0.161***	-	-
	(0.015)		
$ECR*DAGRI_{ij}$	-	0.058***	-
		(0.014)	
$ECR*DIND_{ij}$	-	0.171***	-
		(0.025)	
$ECR*DASEAN_{ij}$	-	-	0.105***
			(0.017)
$ECR*DEU_{ij}$	-	-	2.073***
			(0.516)
$ECR*DJPN_{ij}$	-	-	-0.494
			(6.305)
Constant	142.845*	147.879**	158.751**
	(75.065)	(75.394)	(75.408)
No. of observations	27,160	27,160	27,160
R^2 overall	0.301	0.294	0.301
Breusch-Pagan LM test	χ^2 (1) = 48054.36 (Prob > χ^2 = 0.000)	χ^2 (1) = 47045.18 (Prob > χ^2 = 0.000)	χ^2(1) = 47121.29 (Prob > χ^2 = 0.000)

Notes: 1. The dependent variable is lnX_{ij}.
2. The figures in parentheses are the standard errors, adjusted for clustering on country-pair-HS products.
3.***significant at 1 percent, **significant at 5 percent and * significant at 10 percent.

All traditional covariates in the gravity model, with the exception of common border, are found to be significant. The common border effects are generally irrelevant for this study, given that only Thailand, and Singapore border Malaysia in the sample of countries used in this study. Additionally, the negative sign for POP_i, which is contrary to the theoretical prediction, deserves some explanation. The result is, in fact, not

unexpected because this study employs unidirectional gravity estimation. Hence, there is a lack of variation in the data within the entity, as the only reporter country in this case is Malaysia. Therefore, the equations have been re-estimated without the inclusion of POP_i, but the results for the other variables do not change in terms of their signs and significance. As a result, Table 4.4 reports the gravity estimates with the inclusion of POP_i.

From column (1), tariffs, and NTMs in the importing countries exert opposite effects on Malaysian exports. Tariffs, though negative, do not significantly affect export consignments. Interestingly, the positive and significant coefficient for ECR indicates that a greater NTM coverage of exports in the importing country promotes Malaysian exports. Column (2) makes a distinction in the export coverage of NTMs between agricultural products and industrial products. The interaction terms of *ECR* with the respective dummy variables for agricultural products and industrial products are again positive and significant. Column (3) makes a distinction between importing countries. The *ECR* interaction terms with the dummy variables for ASEAN, EU, and Japan are all positive and significant.

The coverage ratio of NTMs as a proxy of trade policy, though widely used (see Pritchett 1996), Rose (2004) and others believe that it suffers from measurement error, as it suffers from an endogeneity problem. Therefore, to check the sensitivity of the results, equations (1) to (3) are estimated using FC as an alternative measure. The results reported in Table 4.5 indicate that the sign on the influence of NTMs becomes negative for agricultural products in equation (2) and for the EU in equation (3), implying that the presence of NTMs negatively affects Malaysia's agricultural exports and exports to the EU. The contradictory results from Tables 4.4 and 4.5 suggest the presence of dual effects of NTMs by commodity group and by importing country; they can facilitate trade or even hinder it. Why do NTMs facilitate exports?

Table 4.5: Panel Gravity Estimates for Malaysian Exports
(using frequency counts for robustness checks)

Variables	(1)	(2)	(3)
lnGDP_i	3.598	3.663	3.730
	(4.533)	(4.533)	(4.534)
lnGDP_j	1.205***	1.229***	1.235***
	(0.122)	(0.121)	(0.125)
lnPOP_i	-15.054	-15.178	-15.346
	(10.897)	(10.897)	(10.901)
lnPOP_j	0.793***	0.742***	0.739***
	(0.103)	(0.103)	(0.103)
lnDST_{ij}	-3.276***	-3.239***	-3.045***
	(0.239)	(0.235)	(0.241)
ADJ_{ij}	-0.151*	-1.361**	-0.985
	(0.631)	(0.613)	(0.628)
TRF_{ij}	-0.030	-0.025	-0.029
	(0.020)	(0.020)	(0.020)
FC_{ij}	-0.080	-	-
	(0.051)		
$FC*DAGRI_{ij}$	-	-0.185***	-
		(0.054)	
$FC*DIND_{ij}$	-	0.611***	-
		(0.207)	
$FC*DASEAN_{ij}$	-	-	0.335***
			(0.084)
$FC*DEU_{ij}$	-	-	-0.172***
			(0.058)
$FC*DJPN_{ij}$	-	-	0.142
			(0.194)
Constant	156.626**	156.825***	156.168**
	(75.637)	(76.636)	(75.661)
No. of observations	27,160	27,160	27,160
R^2 overall	0.291	0.303	0.296
Breusch-Pagan LM test	χ^2 (1) = 48034.23 (Prob > χ^2 = 0.000)	χ^2 (1) = 48048.56 (Prob > χ^2 = 0.000)	χ^2(1) = 48011.19 (Prob > χ^2 = 0.000)

Notes: 1. The dependent variable is lnX_{ij}.
2. The figures in parentheses are the standard errors, adjusted for clustering on country-pair-HS products.
3. ***significant at 1 percent, **significant at 5 percent and * significant at 10 percent.

The result is easy to interpret if one keeps in mind that Malaysia's exports are highly concentrated in products and markets, leaving little choice for exporters but to respond in a manner that is the most advantageous to their interests. It is therefore not surprising to find positive coefficients on NTMs for industrial products relative to agricultural products and for Japan and ASEAN relative to the EU based on Table 4.5.

This suggests that Malaysia has responded somewhat positively to requirements in the importing countries, more so for products that are of economic importance.

However, in the case of the EU, EU-wide regulations (the large majority of import requirements for products to enter the markets of the EU member states is set at the EU level and is harmonised across member states (Rau et al., 2010) may constrain trade as a Malaysian exporter needs to adapt its products to meet the requirements of each individual European country, with some rare exceptions.

To further elaborate on the possible reasons for the dual effects of NTMs, the following discussion presents a number of illustrative cases on Malaysia's response to NTMs in importing countries. In the case of agricultural products and food, the stringent regulations and standards have, to some extent, led to agricultural improvements (Schlueter et al., 2009). This can be taken as an example of a positive benefit of NTMs on developing countries as adjustments are continuously made in the production systems to adhere to the stringent regulations and standards imposed by importing countries. In fact, the Malaysian government established the farm accreditation scheme (SALM) based on the principles of Good Agricultural Practice (GAP). As a result, of this, farms have seen great improvement in terms of product quality. Furthermore, the implementation of a number of certification schemes [such as ISPM (International Standards for Phytosanitary Measures) No.7 (Export Certification Scheme), ISPM No.14 (The Use of Integrated Measures in a Systems Approach for Pest Risk Management) and ISPM No.15 (Guidelines for Regulating Wood Packaging Material in International Trade)] to comply with international standards has reduced export costs (Wan and Yong 2005). Nonetheless, benchmarking SALM to the EurepGAP (or GLOBALGAP) standard is still important for exporters of fresh fruit and vegetables, as the SALM scheme has yet to be recognised in overseas markets and therefore does not facilitate market access.

Progress has also been made in improving processing facilities and imposing stricter controls on the hygiene standards for seafood products, which are subject to different standards in the EU and Japan. The rate of rejection of seafood products exported to the EU has declined over the years, and Malaysia's border rejection rate in the EU is considerably lower than competitors such as Thailand, Indonesia, Vietnam, and China (Rokiah, 2009). However, challenges still remain for SMEs in the fish processing business to meet EU's hygiene requirements for Hazard Analysis and Critical Control Point (HACCP).

Finally, Malaysia's participation in various international standardisation bodies, such as the International Organisation for Standardisation (ISO), the International Electrotechnical Commission (IEC), the International Telecommunications Union (ITU), the Codex Alimentarius Commission (CAC), the International Plant Protection Convention (IPPC) and the World Organisation for Animal Health (OIE) is testimony of its commitment to compliance. On the regional front, Malaysia is engaged in a programme of harmonising standards within the context of ASEAN and the Asia Pacific Economic Cooperation (APEC). To date, 51.5 percent of the 3,786 Malaysian Standards are aligned with international standards (Mariani, 2005). To further facilitate trade in regulated sectors, Malaysia has signed the ASEAN EEMRA (Mutual Recognition Arrangement for E&E), regarding the recognition of test and certification results for E&E products among ASEAN member countries. MRAs are important to Malaysia, as network trade in E&E goods forms the backbone of the industrial sector. Malaysia is also a party to some APEC MRAs such as the EEMRA Part 1 on the acceptance of test reports and the APEC MRA on toy safety.

As illustrated by the discussion above, the Malaysian government has resorted to a somewhat more "offensive" strategy to address NTMs in importing countries instead of a "defensive" strategy. Despite the stringent requirements in major export destinations,

there have been few attempts to redirect exports to less demanding markets. Obviously, the benefits that accrue from economies of scale following compliance with standards and regulations are important, given the small home market and the concentration of exports in specific products and markets. In this context, NTMs may be considered an incentive to make the necessary adjustments in the existing systems and modes of production to ensure that exports are not unduly jeopardised.

4.4 SUMMARY

The empirical findings of this chapter support the presence of dual effects of NTMs on Malaysia's export consignments, thereby providing a less pessimistic view on the negative effects of NTMs *per se* on trade. From the Malaysian experience in the trade of broad categories of products, NTMs appear to exert a beneficial impact on industrial exports but not on agricultural exports. Additionally, the positive effects of NTMs are present in trade with ASEAN and Japan but not with the EU.

There are numerous reasons that could explain this result. Firstly, the economic importance of industrial exports has given exporters little choice except to conform to the standards and regulations of the importing country to ensure continued access to the major markets. Conversely, compliance costs may be higher for agricultural products, which are prone to various health and safety standards, while information costs remain low for these homogeneous products. Secondly, the harmonisation of standards within ASEAN has most likely facilitated trade between the association and Malaysia. Comparing the EU and Japan, it is not surprising that the beneficial effects of NTMs are only apparent in Malaysia's trade with Japan, as the products traded are primarily industrial goods. As for trade with the EU, Malaysia not only exports an almost equal share of agricultural and industrial exports but also has also to contend with EU's stringent regulations.

CHAPTER 5 : DESCRIPTIVE FINDINGS ON FIRM LEVEL SURVEY

5.1 INTRODUCTION

This chapter presents the descriptive findings of demographic profiles, explorative statistical analysis and frequency analysis of the incidence of NTMs faced by exporters. It looks at aggregating the data collected and examining the incidence of various types of NTMs as reported by the 143 Malaysian exporters in the survey. The chapter then proceeds with discussing the details of the demographic profiles of the 143 firms which took part in the survey (refer to section 5.2). Section 5.3 deals with the incidences of NTMs faced by the export firms. Discussion on the NTMs faced by firm type (resource-based and non-resource- based) firms is given in section 5.4. Explanation on the NTMs faced by firms exporting products according to export level is provided in section 5.5. The last section discusses the NTMs faced by the size of export firms.

5.2 DEMOGRAPHIC PROFILES

The demographic profiles include analysing the following: i) firm type ii) firm ownership iii) firm age iv) firm size v) firm annual turnover and vi) firm major export markets. Firm category refers to resource-based and non-resource-based firms. Resource-based firms manufacture products that have a high component of natural resources as raw material. The natural resources include plants, forest, animals, soil, oil, energy sources, air, water and other natural resources. Examples of resource-based firms are those involved in exporting furniture products, chemical products, agricultural products, oil and gas products, palm oil products, rubber products as well as food and beverage products . The non-resource firms use non-natural products in the production of products. The non-resources are materials (processed), technology and other components that are not naturally found. Firms that use non-resources (non-natural) are firms in the electrical and

electronic sector, machinery and machine components, equipment manufacturing, toys and so forth.

Figure 5.1 shows the composition of firm categories. Resource-based firms constitute about 38 percent and non-resource-based based firms are about 62 percent. This is out of the 143 export firms which responded to the survey.

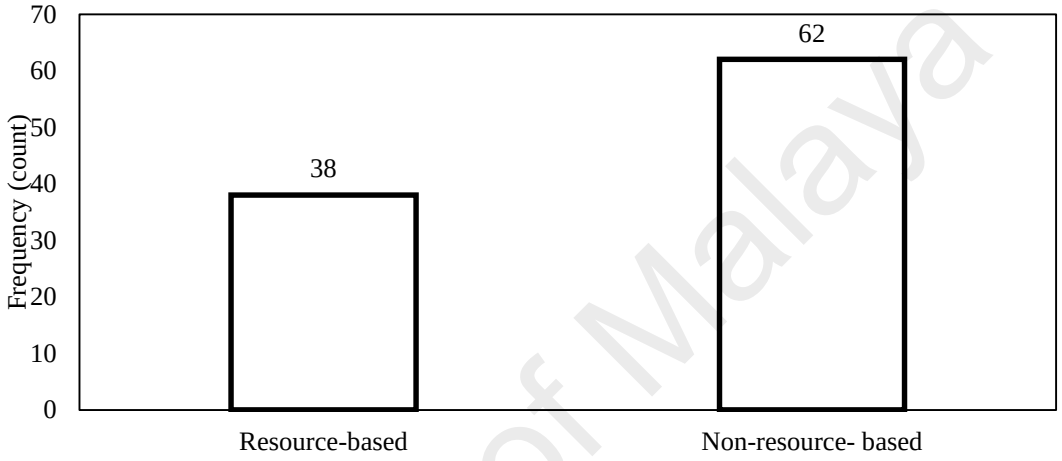

Figure 5.1: Firm Type

Figure 5.2 shows Malaysia's major export products for Jan-Dec 2015. It can be observed that the non-resourced-based products are exported more. As can be seen in Figure 5.2, the resource-based firms export LNG, chemicals, petroleum, palm oil and rubber products which constitute about 31.2 percent of total exports for the given period. In the same period, the non-resource-based firms export electrical and electronic, machinery and parts, metals as well as optical and scientific products which constitute 48.4 percent of total exports. The remaining 20.7 percent comprises of other products which include agricultural, furniture, iron and steel, toys, building hardware etc. Hence, if the computation of percentage exports of resource-based products includes contributions from other products, it can be estimated that the total resource-based products can be about 40 percent, leaving the remaining 60 percent to non-resource-based

products. Hence, the proportion of the sampled firms in this study were reflective of the proportion of resource-based and non-resource-based firms in the population.

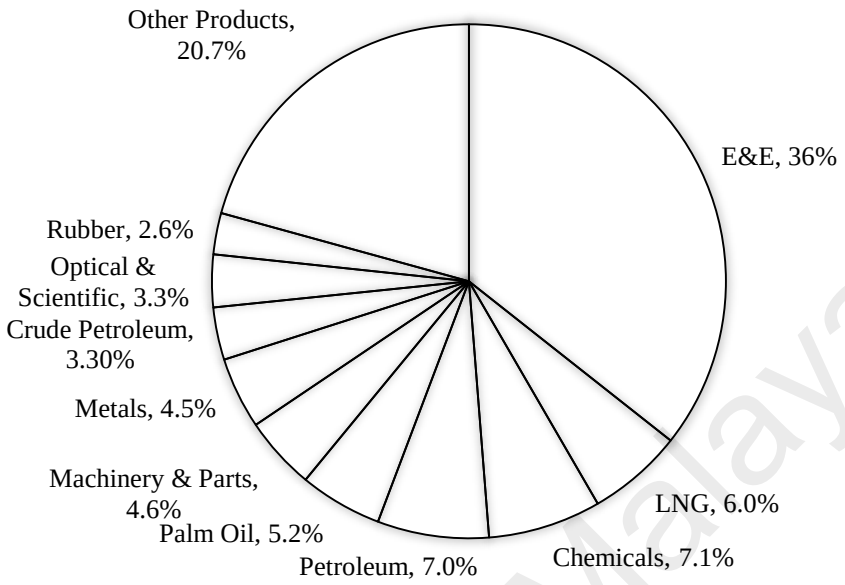

Figure 5.2: Malaysia's Major Export Products Jan-Dec 2015
Source: Department of Statistics, Malaysia (2015)

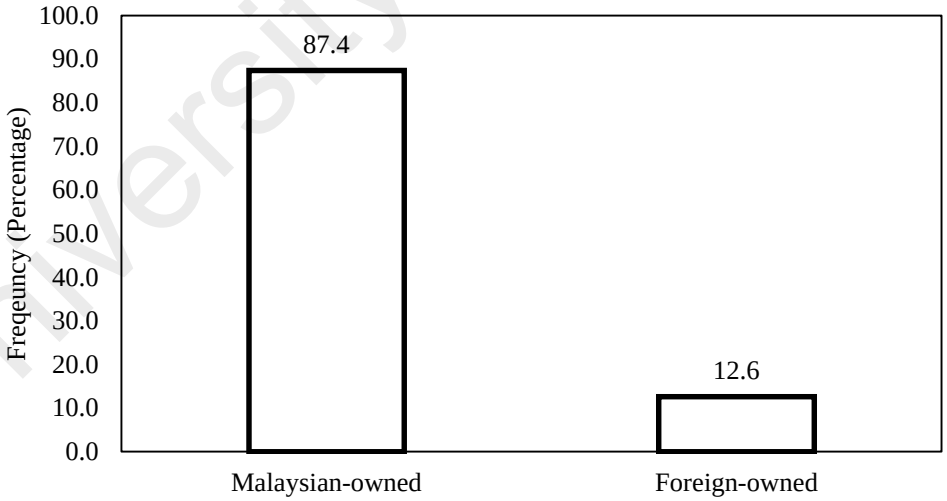

Figure 5.3: Firm Ownership

Figure 5.3 shows that the export firms that responded to the survey were predominantly Malaysian-owned firms which totalled to 87.4 percent. Firms owned by foreigners comprised 12.6 percent.

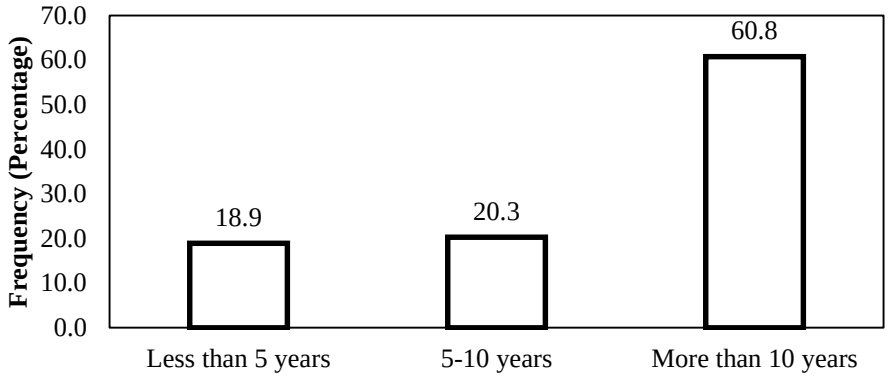

Figure 5.4: Firm Years of Operation

Most export firms that responded to the survey have operated for more than 10 years whereby 60.8 percent of these firms responded to the survey. Others have been in business for less than 5 years and 5-10 years in business with 18.9 percent and 20.3 percent respectively (refer to figure 5.4).

As shown in Figure 5.5, small- size export firms responded the most with 62.5 percent. Medium-sized firms that responded totalled to34.4 percent and large size firms that responded came up to about 3.1 percent. When both the small and medium-size firms are combined, the sum total of the sample firms is 96.9 percent. This is reflective of the population which is about 99 percent.

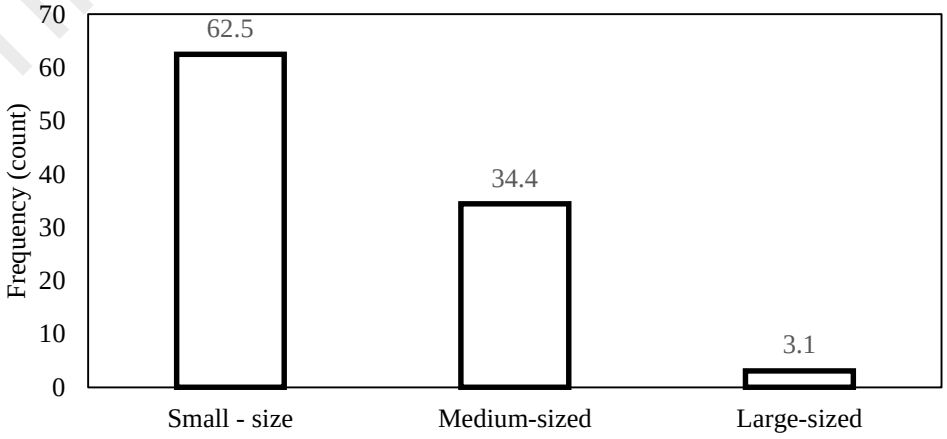

Figure 5.5: Firm Size

Figure 5.6 shows that more than 70 percent of the export firms have an annual turnover of more than RM1, 000,000. Firms with a turnover of less than RM1, 000,000 but more than RM500,000 constitutes about 11.9 percent. Others having a turnover of between RM101-RM500, 000 and less than RM100, 000 are 8.4 percent and 7 percent respectively.

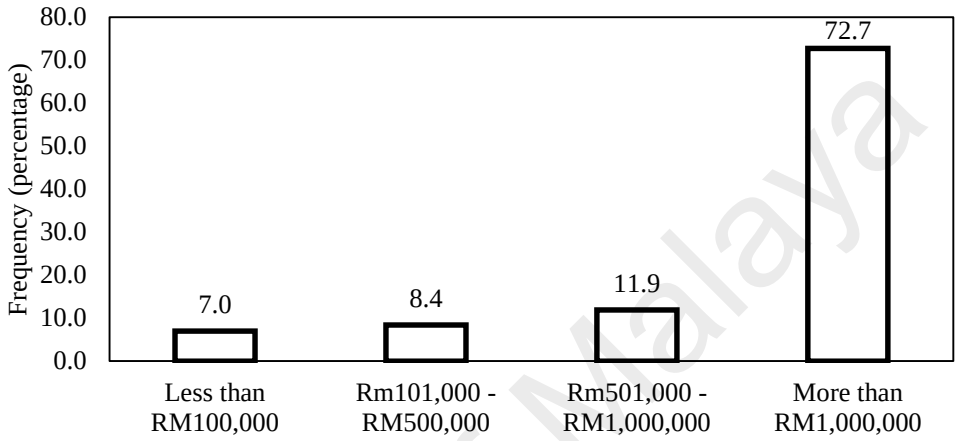

Figure 5.6: Firm Turnover

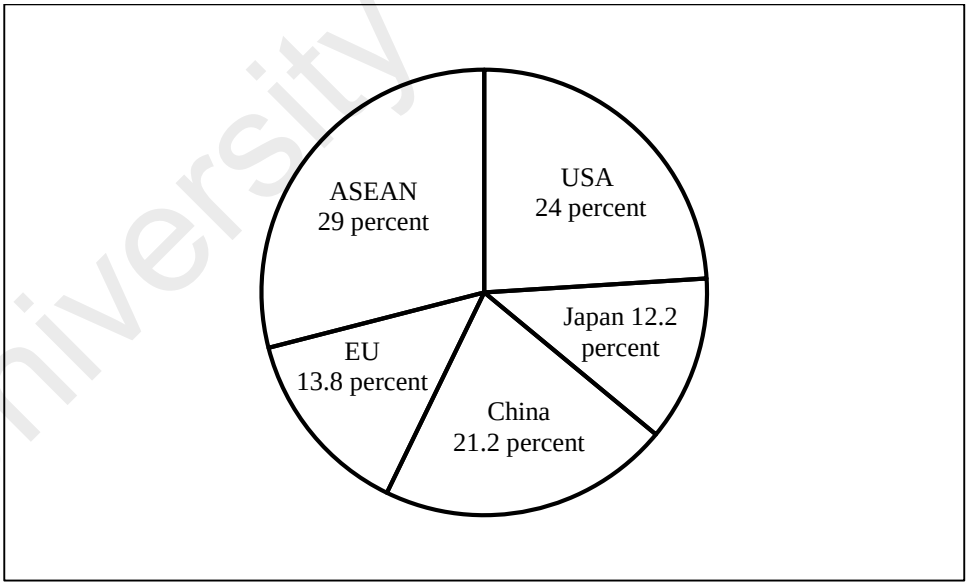

Figure 5.7: Major Export Markets

In regards to export markets, findings from firms that responded to the survey shown that most exporters export to the ASEAN market (29 percent). Exports to the US, China, Japan and EU markets constitutes 24 percent, 21.2 percent, 13.8 percent and 12 percent respectively (refer to figure 5.7).

5.3 NTMs' INCIDENCES FACED BY MALAYSIAN EXPORTERS

Figure 5.8 shows the various NTMs faced by the Malaysian exporters who took part in this study. Among the NTMs that are faced by Malaysian exporters, at the top of the list are pre-shipment, TBT (Technical Barriers – to – Trade) and RoO (Rules of Origin). Pre-shipment measures (a technical measure) emerges as the topmost concern for the exporters. Overall, 77.6 percent of the exporters noted that they faced pre-shipment measures.

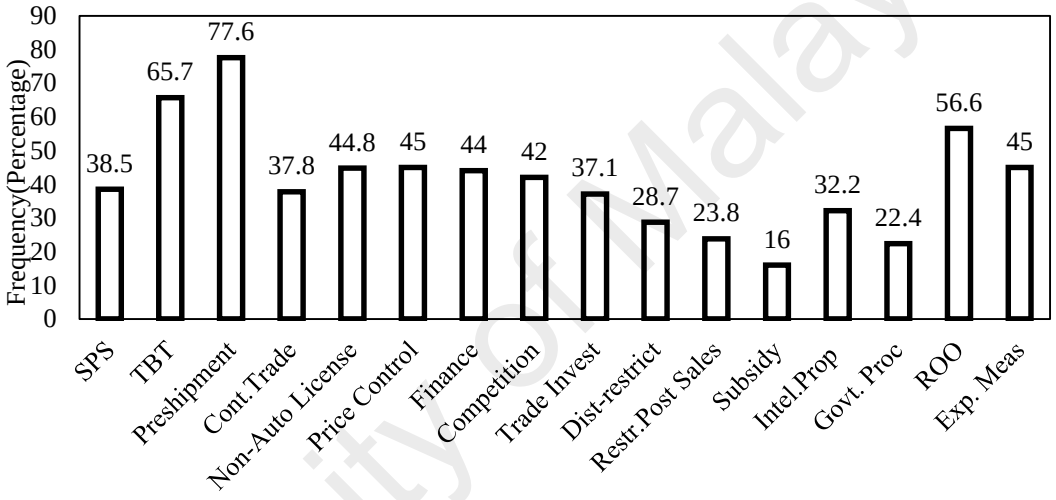

Figure 5.8: Incidence of NTMs

This is followed by TBT measures which are faced by 65.7 percent of the exporters. TBT, according to Yue and Beghin (2009), are effective protectionist measures whenever they do not address market failures and information asymmetries. The rules of origin measures, though only faced by 56.6 percent of exporters, is still high compared to other NTMs faced. Pre-shipment inspections (PSIs) are often necessary to provide some assurance on the quality/quantity of the shipment and thus promote international trade. However, PSIs add to the costs of trading and may reduce the competitiveness streak of exporters, especially from developing countries. UNCTAD (2013) found that exporters from developing countries on average face almost 20 percent of their trade and products

being affected by PSIs. In a study by Rokiah (2007), Malaysia's resource-based export firms - biofuels and wood products face TBT measures imposed in EU and Japan.

This study's findings are further strengthened by Zarrilli and Musselli (2004) and Doanh and Kee (2007), who found that incidences of NTMs is higher in agriculture exports than on manufactured products. Bora et al. (2002) also noted that agricultural product exporters in all countries report a high incidence of NTMs which increases production costs. Mohan et al. (2012) noted that pre-shipment measures are among the technical barriers most commonly faced by agricultural product exporters. They also found that the rules of origin (RoO) measure is a major concern for exporters of agricultural products from developing countries who export to the US and EU. Compliance to stringent rules of origin and completion of customs documentation to prove exporters' eligibility for preferences adds to the total costs which offsets part or even the total margin obtained from the preferential treatment provided to exporters from developing countries from countries like the US and EU (Brenton and Ikezuki, 2005). Inama (2003) and Mattoo et al. (2003) estimated that the total cost of border formalities with regards to the rules of origin measure for a product is about 3 percent of the total value of the product when entering the EU market. For the RoO imposed in the US, the total compliant costs for developing countries was 6.2 percent in 2001 (Carrere and de Melo, 2004). OECD (2005) found that among the main NTMs faced by Asian exporters are TBT and PSI.

A survey by the Government of India (GOI) in 1999 and Mehta (2005) discerned that Indian exporters to the US, EU and Japan face among others stringent TBT and PSI measures. Rules of origin (RoO) was cited as one of the NTMs faced by India and Pakistan exporters (Taneja, 2007). Stringent RoO has been cited as a significant barrier for exporters from developing countries to the US, EU and Japan (Carrere and de Melo, 2011). In a study by Mimouni et al. (2009), TBT and PSIs measures were cited as being

serious obstacles to trade faced by exporters from five developing countries. RoO becomes a necessary measure when free trade agreement is enacted. For Malaysian exporters, RoO is likely to be imposed by Japan and AFTA (ASEAN Free Trade Area) member countries as Malaysia has forged trade partnerships with Japan and is a member of AFTA. RoO measures may not be an issue with the US and EU as Malaysia is yet to establish a pact with these countries.

5.4 NTMs BY FIRM TYPE

Figure 5.9 shows Malaysian based firm exporters of resourced-based and non-resource-based products who face NTMs. The resource-based exporters face SPS, TBT, and PSIs among the top NTMs. As discussed earlier, the resourced-based firms use natural resources to produce their output (product).

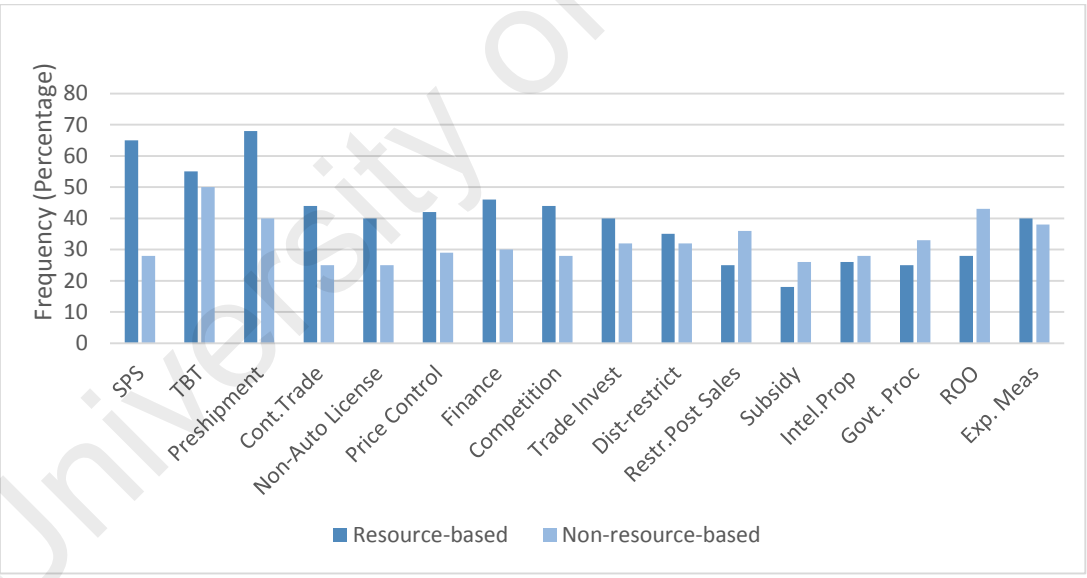

Figure 5.9: NTMs by Firm Type (Category)

Examples of firms in such a category are oil and gas, plantation, wood, furniture, animals, forest, chemical, palm oil, rubber, food and beverage firms and so forth.Non-resource-based export firms face TBT, PSI and RoO as the top three NTMs. Non-resource-based firms sell products that are not from natural resource such as firms in the electrical and

electronic sector, machinery and machine components, equipment manufacturing, toys etc. OECD (2005) found that Asian exporters to the USA, EU, Japan, and Canada face NTMs mainly in the form of TBTs, SPS, PSIs. Resource-based exporters who trade in food products, chemicals, textiles and leather products are particularly affected. This concurs with the findings of Mehta (2005) that Indian firms faced NTMs as listed by OECD (2005) on developing countries' exports. Mehta found that resource-based products such as vegetables, textiles, chemicals and prepared food were mostly affected by the NTMs.

The high incidence of RoO measure faced by non-resource-based firms could be due to Malaysia being a member of ASEAN Free Trade Area (AFTA) and Malaysia-Japan Partnership Agreement (MJPA) which requires the invocation of the measures by the importers for preferential treatment to be bestowed on its members.

5.5 NTMs BY FIRM EXPORT LEVEL

Figure 5.10 explains the situation of Malaysian exporting firms which face NTMs by level of exports.

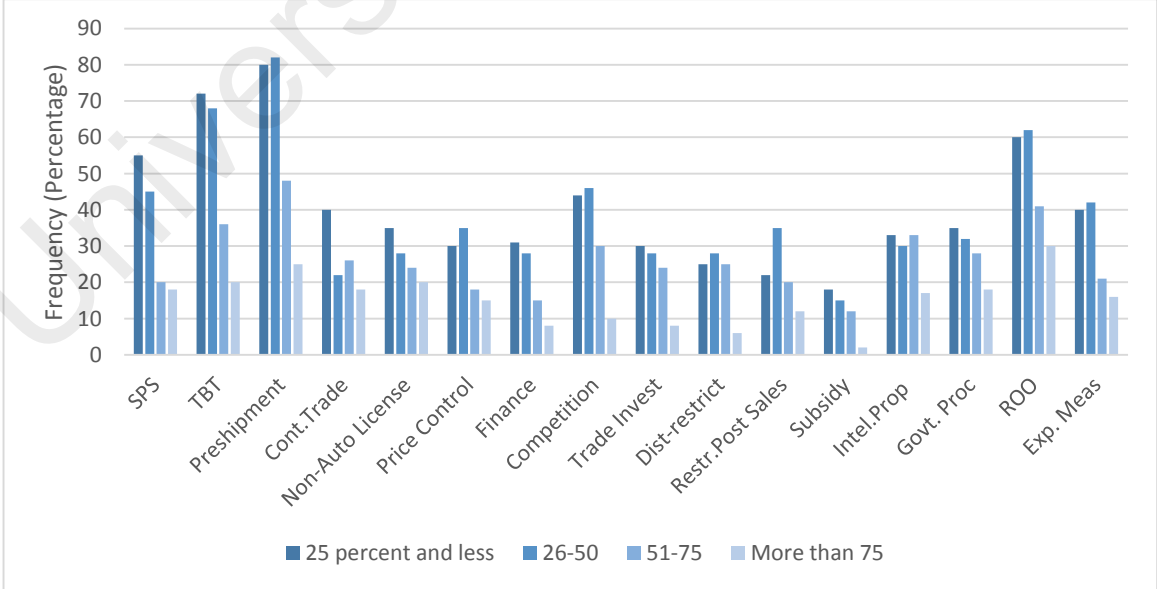

Figure 5.10: NTMs by Firm Export Level

Firms that export '25 percent and less' and '26-50 percent' seem to face NTMs more frequently than the other export level firms. Firms that export 'more than 75 percent' tend to experience the least incidences of NTMs.

5.6 NTMs BY FIRM SIZE

The size of exporters' firm can be connected to the severity of NTMs faced. In the case of Malaysian exporters, as depicted in Figure 5.11, a high percentage of small and medium-sized export firms face higher incidences of NTMs compared to large-sized export firms. Small firms face the most incidence of NTMs amongst the three firm sizes.

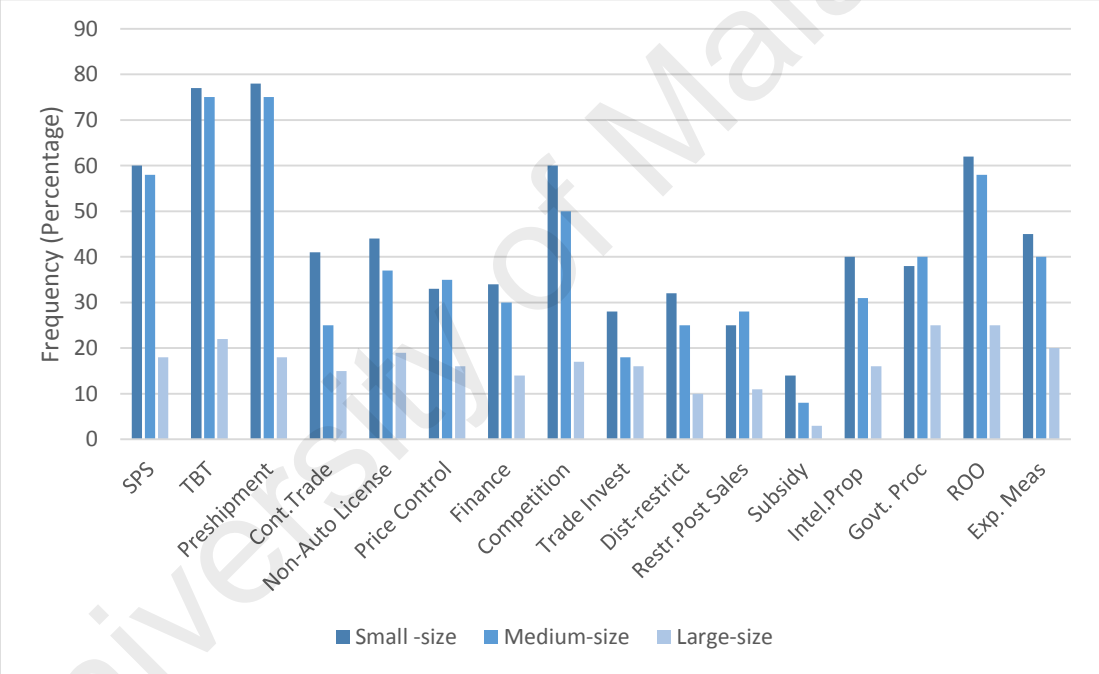

Figure 5.11: NTMs by Firm Size

Small and medium firms largely face PSI, TBT, SPS, competition and RoO types of NTMs in their export destinations. Barnett and Amburgey (1990) found that small firms lacked available resources to handle NTMs such as customs related transactions; this results in high trade costs which eventually impedes exports (Leonidou, 1995).

The customs formalities are captured under the PSIs which is the highest form of NTM faced by Malaysian exporters of small and medium firms in this study. Ojala and

Tyvrainen (2007) also found that the stringency of NTMS faced by small and medium sized firms in the Japanese market is due to lack of resources and capability to operate in the market. In research studies on firm size and export behaviour in the early years, a positive relationship of both the variables were concluded (Wignaraja, 2002; Aitken et al., 1997; Burton and Schlegelmilch, 1987 and Reid, 1984). However, some studies concluded otherwise (Archarungroj and Hoshino, 1998; Marandu, 1995 and Karafakioglu, 1986). One of the main reasons argued by authors on firms feeling the heat upon facing the incidence of NTMs is the cost of compliance (CoC) (Bell, 1997; Hudson and Godwin, 2000; Dhanaraj and Beamish, 2003; Wilson and Otsuki, 2004; Passadila and Liao, 2007 and Saini, 2011). They noted that smaller-sized firms face financial and other resource constraints in complying with NTMs whereas large firms face lower compliance costs (Guntz et al., 1995).

5.7 SUMMARY

The chapter presents important information about the 143 firms surveyed. The participation by non-resource-based firms was the highest among the 143 firms which tallies with the actual export contribution by this type of firms in 2015. Figure 5.2 shows that close to 50 percent exports in 2015 are from non-resource-based firms. This is after exclusion of contribution by other products which constitute about 20.7 percent. Established export firms with more than 10 years in operation responded the most. This could be attributed to them placing a high importance on providing feedback to this and similar surveys which may be used in future policy making endeavours.

According to the response rate, Malaysian owned export firms outweigh foreign owned export firms. This is expected as Malaysian owned export firms are obviously higher in number than foreign owned export firms. The highest respondents in the survey were from the exporters of small firms. This is reflective of the composition of businesses

in Malaysia where export firms are comprised mostly of small firms. Small firms are critically in need of policies that will be beneficial to them. One of the aim of this study's findings is to contribute to that end.

The survey shows that Malaysian firms export mostly to the ASEAN region. For individual countries, the USA is the top export destination, followed by China, EU and Japan. The bulk of exported products to ASEAN, EU and Japan concurs in percentage with the exports in 2015 as reported by MITI (2015). Firms with less export intensive range with export levels of '25 percent and less' and '26-50 percent' seem to face incidences of NTMs more than export intensive firms with export levels of more than 50 percent. This could be attributed to the fact that the more resources that the intensive export firms have, the capacity and capability to manage the NTMs effectively and treat them as normal becomes exponentially higher. The TMs mostly faced by Malaysian export firms are SPS, TBT as well as pre-shipment and customs. Resource-based firms are largely affected by two measures, which are SPS and pre-shipment and customs while non-resource-based firms are affected by TBT and pre-shipment and customs measures (refer to Figure 5.9).

CHAPTER 6:

PERCEPTIONS OF MALAYSIAN EXPORTERS TOWARDS NON-TARIFF MEASURES

6.1 INTRODUCTION

This chapter presents the findings on the impact of overall NTMs, TMs, CPs, ONTMs, PMs and InfoAsym of the 143 Malaysian exporters who took part in the survey. The findings are provided against the export levels of five export markets, namely, the USA, EU, Japan, China and ASEAN. Results pertaining to the overall impact of NTMs is reported in section 6.2. In section 6.3, the outcomes of the impact of stringency of TMs are given. Results on the stringency of specific NTMs which include; CPs, ONTMs (such as culture barriers and language barriers), PMs and InfoAsym against export levels with respect to the five export markets are given in section 6.4. The following section highlights the findings of the NTM types faced by Malaysian exporters and finally, the last section of this chapter summarizes the key findings of this research.

6.2 RESULTS ON IMPACT OF STRINGENCY OF NTMs

The following discussion explains the stringency of NTMs on Malaysia's exports and by major export destinations. The control variables included are firm type, firm size, firm age and firm ownership. The multinomial logistic regression model is used to estimate the stringency of NTMs on the level of exports against the reference export level as given below;

Y_1 = '25 percent and less'; Y_2 = '26-50 percent'; Y_3 = '51-75 percent'; and Y_4 = 'more than 75 percent' (reference group), and for each market as mentioned in chapter 3, is restated below;

$$Y_{1\text{-}4} = \alpha + \beta_1 FIRMTYPE + \beta_2 FIRMOWNERSHIP + \beta_3 FIRMAGE + \beta_4 FIRMSIZE + \beta_5 STRNTM \quad (3.12)$$

As mentioned in the research methodology chapter, the reference group 'more than 75 percent' is not analysed. The model equation used in estimating the stringency of NTM against each export level (including reference export level) and for each export market is restated below;

$$Y_{1\text{-}4} = \alpha + \beta_1 FIRMTYPE + \beta_2 FIRMOWNERSHIP + \beta_3 FIRMAGE + \beta_4 FIRMSIZE + \beta_5 STRNTM_{US,EU,Japan,China,ASEAN} \quad (3.19)$$

The diagnostic tests which use chi-square and pseudo-square (Cox and Snell; Nagelkerke and McFGadden) as the model fit for stringency of NTMs has been achieved. (refer to Table 6.1). Model fit information suggests that significance of p-value for the chi-square depicts that there is a relationship between the dependent variable and combination of independent variables. According to McFadden (1973), values of Pseudo-square ranging from 0.2 to 0.4, are considered "highly satisfactory." Likelihood ratio tests are presented in Table 6.2. It illustrates that the stringency of NTMs variable is significantly related to the effect (percent export). The control variables used in this analysis (firm type, firm ownership, firm age and firm size) were also found to be significantly related to the model. It can be concluded that each variable contributes to the model.

The parameter estimates are further reported in Table 6.1 and it shows that exporters whose exports are 75 percent and below, are more likely to find NTMs to be stringent compared to the reference group ("more than 75 percent"). Resource-based firms compared to non-resource-based firms are more likely to be in two export level groups i.e. "26-50 percent" and "51-75 percent" compared to the reference group. These findings imply that resource-based firms in these two export level groups may perceive NTMs to be stringent compared to firms that export more than 75 percent (reference group). Small and medium-sized firms seem to be significantly related to three export level groups ("25 percent and less", "26-50 percent" and "51-75 percent"). Small-size

firms' variable in the "51-75 percent" export level is significant at 10 percent level. It implies that these firms are inclined to perceive NTMs to be stringent and this could be the reason for their lower export level (percentage).

The argument is that an NTM is perceived to be stringent if it potentially causes major implications on cost, production, resources and capacities which may become an impediment to exports. NTMs can lead to an increase in the cost of production and delivery (Francois et al., 2011). Fearing the high costs that need to be incurred, the perceived stringency may reduce the export potential capacity of exporters, hence resulting in a lower export level. However, this might not be the case always as perceived stringency of NTMs may not always render lower exports for firms that are better prepared. This is because experienced exporters and large size firms with high export percentage are likely to perceive NTMs as less of a concern due to the fact that they are better positioned to withstand the costs, production and capacity implications. These exporters understand and manage the NTMs effectively by meeting the standards and requirements imposed by their importers. Hence, it is appropriate to put forth the argument that exporters in the "more than 75 percent" group are less likely to perceive NTMs as stringent.

In reference to high-valued food exports, Jaffee and Henson (2004) found that the recurring costs of compliance experienced by exporters from developing countries puts them in a less competitive position in export markets. This could be the case for resource-based firms' exporting less than 75 percent from a developing country like Malaysia as elucidated in this study's findings. It could also be the case of exporters deflecting their exports to other countries because of increased cost of compliance, especially with regards to export to the US market (World Bank, 2005, Debaere, 2005). Anders and Caswell (2009) expounded that exporters that stand to lose by complying with these standards, generally tend to be the small exporters. This is consistent with this study's

findings, where small sized firms in the three export level groups (less than 75 percent) may perceive NTMs to be stringent.

Table 6.1: Parameter Estimates for Stringency of NTMs

More than 75 percent		B	Std. Error	Wald	df	Sig	Exp(B)
25 percent and less	Intercept	-1.073	.877	1.497	1	.221	
	Resource-based (against non-resource-based)	.672	.646	1.080	1	.299	1.957
	Malaysian-owned (against foreign owned)	.039	.914	.002	1	.966	1.040
	Less than 5 years (against "more than 10 years)	.039	.927	.002	1	.966	1.040
	5-10 years (against "more than 10 years)	.346	.815	.180	1	.671	1.413
	Small size (against large size)	1.997	.799	6.246	1	.012	7.368
	Medium size (against large size)	2.094	.872	5.766	1	.016	8.119
	NTMs stringent (against NTMs not stringent)	1.812	.743	5.942	1	.015	6.123
26 – 50 percent	Intercept	-1.250	.874	2.046	1	.153	
	Resource-based (against non-resource-based)	1.332	.671	3.937	1	.047	3.788
	Malaysian-owned (against foreign owned)	-1.433	.923	2.412	1	.120	.239
	Less than 5 years (against "more than 10 years)	.259	.967	.072	1	.789	1.295
	5-10 years (against "more than 10 years)	-.245	.879	.077	1	.781	.783
	Small size (against large size)	2.611	.885	8.707	1	.003	13.607
	Medium size (against large size)	3.435	.948	13.139	1	.000	31.017
	NTMs stringent (against NTMs not stringent)	2.732	.781	12.253	1	.000	15.370
51 – 75 percent	Intercept	-3.349	1.330	6.344	1	.012	
	Resource-based (against non-resource-based)	1.966	.754	6.800	1	.009	7.141
	Malaysian-owned (against foreign owned)	.831	1.307	.404	1	.525	2.295
	Less than 5 years (against "more than 10 years)	-.600	1.185	.256	1	.613	.549
	5-10 years (against "more than 10 years)	.388	.947	.168	1	.682	1.475
	Small size (against large size)	1.858	.960	3.746	1	.053	6.413
	Medium size (against large size)	2.188	1.029	4.521	1	.033	8.917
	NTMs stringent (against NTMs not stringent)	1.808	.856	4.463	1	.035	6.097

Notes: Reference category is "more than 75 percent". Model fitting: $p<0.05$ for chi square 44.721. Cox and Snell: 0.269; Nagelkerke: 0.291; McFadden: 0.122

The standards imposed by importing countries tend to be a catalyst for larger, more established exporters among developing countries and unfortunately, acts as a barrier to small exporters (Anders and Caswell, 2009). In discussing the stringency of NTMs which relates to costs, Prabir De (2011) discerned that the higher the transaction costs between trading partners, the lesser they trade. He further noted that a 10 percent

fall in transaction costs at borders has the effect of increasing a country's export by about 2 percent.

Table 6.2: Likelihood Ratio Test

Effect	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	175.655[a]	.000	0	.
Firm Type	185.639	9.984	3	.019
Firm Ownership	182.751	7.095	3	.069
Firm Age	178.646	2.990	6	.810
Firm Size	194.484	18.829	6	.004
NTMs stringent	192.070	16.415	3	.001

a. This reduced model is equivalent to the final model because omitting the effect does not increase the degrees of freedom.

To distinguish the stringency of NTMs by export destinations for Malaysian goods, the analysis is disaggregated by core markets, namely the US, EU, Japan, China and ASEAN. Each market is interacted with the NTM stringency variable. Summary of the findings is shown in Table 6.3 below. It can be noted from Table 6.3, that firms that export below 75 percent are more likely to find NTMs as stringent in most major export destinations. The findings for the EU market is interesting as it concurs with the arguments in chapter 4, where NTMs in the EU are although fewer in number, are relative to the other major export destinations, and also found to be stringent. NTMs imposed by China and ASEAN markets are considered stringent by firms with "26-50 percent" and "51-75 percent" export levels. Among the three export levels, resource-based firms are significantly related to the "51-75 percent" export group compared to the reference group. These resource-based firms could be petroleum, LNG, chemical, furniture and palm oil which constitute more than 30 percent of total exports in 2015 (MITI, 2015). Resource-based firms that export between 51-75 percent to the US and EU may likely perceive the NTMs as being stringent.

Table 6.3: Summary Results of Stringency of NTMs by Export Markets

Percent Export	B	Std. Error	Wald	df	Sig.	Exp (B)
US						
25 percent and less	2.672	1.181	5.120	1	.024	14.466
26 -50 percent	2.635	1.181	4.976	1	.026	13.939
51 – 75 percent	2.611	1.258	4.304	1	.038	13.610
EU						
25 percent and less	1.713	.714	5.758	1	.016	5.544
26 -50 percent	1.856	.729	6.483	1	.011	6.401
51 – 75 percent	1.598	.806	3.928	1	.047	4.941
Japan						
25 percent and less	1.429	.751	3.620	1	.057	4.176
26 -50 percent	2.861	.838	11.670	1	.001	17.487
51 – 75 percent	1.711	.704	5.903	1	.015	5.532
China						
25 percent and less	1.707	.734	5.402	1	.020	5.510
26 -50 percent	1.968	.754	6.805	1	.009	7.156
51 – 75 percent	.341	.893	.146	1	.703	1.406
ASEAN						
25 percent and less	1.700	.576	8.703	1	.003	5.473
26 -50 percent	1.187	.585	4.117	1	.042	3.276
51 – 75 percent	1.080	.663	2.653	1	.103	2.945

Notes: Reference category is "more than 75 percent". Refer to Appendices A1, A2, A3, A4 and A5 for detailed results.

However, resource-based firms may perceive exports to Japan and ASEAN markets as being significantly more stringent. This is because firms in the two export levels ("26-50 percent" and "51-75 percent") may perceive NTMs to be stringent in Japan and ASEAN markets. Though Malaysia is part of ASEAN, resource-based firms still perceive NTMs as being stringent in its own region.

Firms which have been in operation for less than 5 years are most likely to be only in the '25 percent and less' export group. Strict TM imposed in Japan and ASEAN market could explain why Malaysian exporters perceive it as stringent. Firm size is also found to be important for export intensity especially to major markets. Small and medium sized firms are most likely to be in the '25 percent and less' and '26-50 percent' exports groups for the US, EU and Japan markets. NTMs are likely to pose challenges to firms in these export levels compared to larger export level groups.

Fliess and Kim (2008) studied 136 exporters from 10 OECD countries and non-OECD countries and found that more than half of the SMEs that participated in the study

experienced at least one NTM posing as a major or prohibitive barrier to trade. OECD (2005) found certain NTMs such as customs and administrative procedures and technical barriers to trade imposed by developed countries are considered stringent by developing countries. The OECD study findings seem to strengthen this study on Malaysian exporters where in reference to Table 6.3, most export groups find NTMs imposed by the US, EU, and Japan as stringent. Henson and Loader (2001) noted that although TMs adopted by developed countries may be legitimate, however, its imposition can be stringent to developing countries to the extent where it obstructs exports.

WTO (2012) in support of this argument found that NTMs which have legitimate purpose in rectifying market failures can still increases cost for exporters. Stringent food safety standards imposed in developed countries generally hamper the exporting ability (implying the capabilities of exporters from developing countries) of developing countries (Otsuki et al., 2001). Zarrilli and Musselli (2004) found that in the wake of biotechnology trade, developed countries have imposed restrictive measures which are costly and burdensome for exporters from developing countries to the point where they find them stringent. The standards imposed cause exporters from developing countries to find them stringent and bear high compliance costs which restrict their ability to export (Portugal-Perez et al., 2010).

The above argument is supported by an empirical study done by Henson and Heasman (1998) where the authors revealed that unit compliance costs are negatively related to firm size (implying economies of scale. Large firms are generally more able to comply with regulations in a manner which yields competitive advantage than small firms. Pasadilla and Liao (2007) found that relatively, large and well established firms are able to cope with the additional and varying standards as opposed to small firms. Fliess and Kim (2008) noted that regulatory compliance costs in EU deter smaller firms from engaging in international trade. However, the authors found that multiple standards in EU

markets tend to favour larger exporters as it quickly becomes a source of competitive advantage but the same is not true for SMEs as it poses a barrier to trade.

Export intensive and larger firms generally have exposure and capabilities to manage and comply with NTM requirements in the export markets. On the other hand, such stringent measures imposed by developed countries are not perceived as stringent because it can spur exporters from developing countries to be competitive (Maertens and Swinnen, 2009) by investing in technological capabilities (Nixon and Wignaraja, 2004). This could be a possible explanation for large firms not perceiving NTMs as stringent in this study. In a study by Saini (2011), stringent labour and environmental standards imposed by the US and EU have caused Indian firms in the textile and clothing sector to face increased costs of compliance, In some cases, NTMs such as quotas and licences may even restrict entry of products into a particular market. The author also noted that NTMs may be firm specific where his study noted that smaller firms find it difficult to comply with NTMs' requirements as they lack bargaining power due to insufficient resources and capabilities unlike their counterparts which are the larger firms. Smaller firms tend to lose out in exports as they tend not to benefit from economies of scale (Bhandari and Maiti, 2007) due to the reason that they incur higher cost of compliance (Loader and Hobbs, 1999).

As mentioned above, Malaysian exporters can be divided into two export level groups; '26-50 percent' and '51-75 percent. They still perceive NTMs as being stringent in ASEAN region, even though Malaysia is part of this trade group. Presently, studies with regards to NTMs imposed by ASEAN countries are minimal. According to Cadot et al. (2013), one reason among others could be because the region suffers from a lack of information on NTMs as they are not transparent. Furthermore, the authors stated that the price-raising effect of NTMs in the region is undoubtedly substantial. Hence, this argument lends support to the reason why Malaysian exporters find NTMs in the ASEAN

countries severe or stringent, especially those exporting less than 75 percent. As observed by Plummer (2006), the ASEAN economic cooperation has not developed significantly as it should have, citing the reason that intra-regional trade growth did not develop as predicted. Elliot and Ikemoto (2004) concurred with this stating that the signing of AFTA in 1993 did not trigger much intra-regional trade as forecasted in the subsequent years after the signing of AFTA took place.

Stringency of NTMs even among the ASEAN member countries could be a cause for concern. Siah et al., (2009) asserted that though the AFTA was signed and paved way for a stronger collaboration among members that was expected to enhance trade, each country instead placed importance on and established protectionist measure against imports from the rest of the world encouraging trade diversion to take place among its members. Though ASEAN is proud to have AFTA where progress has been achieved in terms of tariffs, the NTMs continue to constitute serious impediments to intra-regional trade (Plummer et al., 2014 and Chia, 2013). Shepherd (2010) found that efforts by ASEAN countries to reduce NTMs were not encouraging. Intra-ASEAN trade has improved as seen from the increase in the total trade of US$166.1 billion in 2000 to US$602 billion in 2012 as reported in the ASEAN Secretariat 2012. Though trade is progressing, Basu Das (2012) notes that NTMs pose a real concern for ASEAN member countries to achieve a single market and production base. The author further quoted that among the NTMs, the non-automatic licensing, technical regulations and quality standards continue to prevail in the region. ASEAN countries were urged to have a standardised business environment and the SMEs especially were pressed to be more competitive (The STAR, 2015).

6.3 STRINGENCY OF TMs

The model explains the stringency of TMs on Malaysian exports and by major export destinations. The multinomial logistic regression model equations estimate the stringency of TMs on export levels against the reference export level and against each market are restated below (see Chapter 3):

$$Y_{1\text{-}4} = \alpha + \beta_1 FIRMTYPE + \beta_2 FIRMOWNERSHIP + \beta_3 FIRMAGE + \beta_4 FIRMSIZE + \beta_5 STRTM \quad (3.13)$$

$$Y_{1\text{-}4} = \alpha + \beta_1 FIRMTYPE + \beta_2 FIRMOWNERSHIP + \beta_3 FIRMAGE + \beta_4 FIRMSIZE + \beta_5 STRTM_{US,EU,Japan,China,ASEAN} \quad (3.20)$$

The likelihood ratio tests presented in Table 6.5 shows that the stringency of TMs variable is significantly related to the effect (percent export). Among the control variables, only the firm type and firm size are significantly related to the model.

The UNCTAD classification of TMs comprise the first three chapters which are SPS, TBT and PSI and other formalities (UNCTAD, 2013). The frequency index analysed by Gourdon and Nicita (2013) shows that among the NTMs, TMs, TBTs and SPS are the measures that are most often used. These measures are imposed to ensure the protection of human, animal, and environmental safety. The compliance costs in meeting the TM requirements are normally trade-restrictive and can double the trade barrier effect for some products (Moise and Le Bris, 2013). This study's findings on perceived stringency of TMs are presented in Table 6.4. It informs that the perceived stringency of TMs is most likely to be seen in the groups that export 75 percent and below, compared to the reference group. It implies that large-size (more than 75 percent-reference group) exporting firms may perceive TM as not stringent to their exports.

Table 6.4: Parameter Estimates for Stringency of TMs

More than 75 percent		B	Std. Error	Wald	df	Sig.	Exp(B)
25 percent and less	Intercept	-1.487	.971	2.342	1	.126	
	Resource-based (against non-resource-based)	.435	.633	.471	1	.492	1.545
	Malaysian-owned (against foreign owned)	1.066	.946	1.271	1	.260	2.905
	Less than 5 years (against "more than 10 years)	-.579	.966	.359	1	.549	.561
	5-10 years (against "more than 10 years)	.200	.779	.066	1	.798	1.221
	Small size (against large size)	1.691	.744	5.161	1	.023	5.426
	Medium size (against large size)	1.842	.815	5.103	1	.024	6.307
	TMs stringent (against TMs not stringent)	2.147	.916	5.491	1	.019	8.562
26 – 50 percent	Intercept	-2.871	1.091	6.926	1	.008	
	Resource-based (against non-resource-based)	.939	.694	1.832	1	.176	2.557
	Malaysian-owned (against foreign owned)	.234	1.006	.054	1	.816	1.263
	Less than 5 years (against "more than 10 years)	-.960	1.049	.839	1	.360	.383
	5-10 years (against "more than 10 years)	-.413	.880	.220	1	.639	.661
	Small size (against large size)	2.430	.894	7.391	1	.007	11.354
	Medium size (against large size)	3.499	.949	13.608	1	.000	33.096
	TMs stringent (against TMs not stringent)	4.243	.970	19.138	1	.000	69.608
51 – 75 percent	Intercept	-4.401	1.479	8.861	1	.003	
	Resource-based (against non-resource-based)	1.718	.754	5.189	1	.023	5.575
	Malaysian-owned (against foreign owned)	2.089	1.372	2.319	1	.128	8.081
	Less than 5 years (against "more than 10 years)	-1.453	1.229	1.399	1	.237	.234
	5-10 years (against "more than 10 years)	.252	.919	.075	1	.784	1.286
	Small size (against large size)	1.672	.939	3.169	1	.075	5.321
	Medium size (against large size)	2.205	.994	4.919	1	.027	9.073
	TMs stringent (against TMs not stringent)	2.986	1.015	8.646	1	.003	19.799

Notes: Reference category is "more than 75 percent".
Model fitting: $p<0.05$ for chi-square 66.028. Cox and Snell: 0.370; Nagelkerke: 0.400; McFadden: 0.180

Table 6.5: Likelihood Ratio Test

Effect	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	172.583[a]	.000	0	.
Firm Type	179.868	7.285	3	.063
Firm Ownership	177.387	4.804	3	.187
Firm Age	175.696	3.112	6	.795
Firm Size	191.195	18.612	6	.005
TMs Stringent	210.305	37.722	3	.000

a. This Reduced Model Is Equivalent To The Final Model Because Omitting The Effect Does Not Increase The Degrees Of Freedom.

The findings in this study clearly denote that small and medium-size firms are significantly related to the three groups that export 75 percent and below percentage compared to large size firms. Hence, it can be said that the perceived stringency of TBT and SPS is less likely to be a concern for large sized firms exporting more than 75 percent. As discussed earlier, large size firms are in better position in terms of resources, capabilities and capacities to meet the TMs' requirements for their exports. The findings also show that resource-based firms are implicated only in '51-75 percent' export level group.

The findings for each export market is shown in detail in Table 6.6. It shows that for almost all three export level groups in all export markets, the perceived stringency of TM is significantly related. It concurs with the findings by Fugazza (2013), who posited that TMs especially, TBT and SPS pose a concern for developing countries. He further noted that an average of 30 percent of products and trade from developing countries are likely to face the brunt of TBT and 15 percent SPS measures. The findings regarding Malaysia, fits Fugazza's conclusions as Malaysia also falls under the category of developing countries. It seems that the NTMs imposed on these firms which exports sizeable export level (more than 50 percent) of resource-based products are perceived to be stringent because of the possibility of high compliance costs compared to the other lower export level groups. Small and medium size firms in the three export levels exporting 75 percent and below are most likely to perceive TMs as stringent compared to the reference group that exports more than 75 percent. Resource-based firms are clearly in the '51-75 percent' export groups for all the export markets.

Interview feedback given by resource-based small and medium size firms which export lesser than 50 percent, perceive the TMs as stringent as their export level is not high enough to generate the financial strength to meet the stringent requirements imposed on their export products. For the ASEAN market, the same reason is given in the case of

stringency perceived on NTMs as it could be applicable for firms in the two export level groups (50 percent and below) which perceive TMs to be stringent giving rise to the possible cause of the current export level.

Table 6.6: Summary Results of Stringency of TMs by Export Market

Percent Export	B	Std. Error	Wald	df	Sig.	Exp (B)
US						
25 percent and less	1.446	.758	3.642	1	.056	4.246
26 -50 percent	3.612	.828	19.017	1	.000	37.040
51 – 75 percent	1.767	.876	4.073	1	.044	5.855
EU						
25 percent and less	1.385	.753	3.382	1	.066	3.994
26 -50 percent	3.590	.825	18.931	1	.000	36.237
51 – 75 percent	2.198	.867	6.419	1	.011	9.004
Japan						
25 percent and less	1.610	.783	4.229	1	.040	5.005
26 -50 percent	3.582	.839	18.247	1	.000	35.955
51 – 75 percent	2.249	.889	6.397	1	.011	9.480
China						
25 percent and less	1.767	.725	5.938	1	.015	5.853
26 -50 percent	2.049	.739	7.685	1	.006	7.759
51 – 75 percent	.397	.880	.204	1	.652	1.488
ASEAN						
25 percent and less	1.648	.707	5.440	1	.020	5.197
26 -50 percent	1.509	.728	4.297	1	.038	4.521
51 – 75 percent	.354	.874	.164	1	.685	1.425

Notes: Reference category is "more than 75 percent". Refer to Appendices A6, A7, A8, A9 and A10 for detailed results.

6.4 STRINGENCY OF SPECIFIC NTMs

Apart from analysing the stringency of overall NTMs in the preceding section, CPs, ONTMs namely, language and cultural barriers, not having an office on site and a bias or preference of the importing country for its own company and PMs are becoming a growing concern for exporters. As such, the previous analysis is repeated in this section to account for these NTMs.

6.4.1 Stringency of CPs

The multinomial equation for stringency of CPs is restated below;

$$Y_{1\text{-}4} = \alpha + \beta_1 FIRMTYPE + \beta_2 FIRMOWNERSHIP + \beta_3 FIRMAGE + \beta_4 FIRMSIZE + \beta_5 STRCP \quad (3.14)$$

The multinomial equation for stringency of CPs for export markets is restated below;

$$Y_{1\text{-}4} = \alpha + \beta_1 FIRMTYPE + \beta_2 FIRMOWNERSHIP + \beta_3 FIRMAGE + \beta_4 FIRMSIZE + \beta_5 STRCP_{US,EU,Japan,China,ASEAN} \quad (3.21)$$

The summary of the parameter estimates for perceived stringency of CPs is reported in Table 6.7. It suggests that stringency of CPs is significantly related to three export level groups; '25 percent and less', '26-50 percent' and '51-75 percent'. It implies perceived stringency of CPs is most likely to be in these three export level groups compared to the reference group. For export destinations, the findings are reported in Table 6.9. Custom procedures are perceived to be stringent for all firms with export levels of 75 percent and below compared to the reference group.

Malaysia, although is a part of the ASEAN trade group, still regards CPs imposed by its ASEAN counterparts as being stringent. According to EU-ASEAN Business Council Report (2015), most ASEAN countries' CPs are trade prohibitive. The report noted that non-transparent and inconsistent application of CPs among member countries impede free flow of goods and services. It further reported that non-standardized, lengthy and complex customs procedure in ASEAN countries weigh heavily on small and medium sized firms' trade flow. Arvis et al.(2013) found that improvement in CPs will improve a country's logistics performance which could reduce bilateral trade costs by ten times more than an equivalent reduction in tariff barriers.

This study noted that the resource-based firms most likely to be in the '26-50 percent' and '51-75 percent' export level groups perceive CPs as stringent compared to the reference group for US and Japan markets. For the EU market, the resource-based firms are most likely to be in the '51-75 percent' export level group whereby they perceive CPs as stringent compared to the reference group.

Table 6.7: Parameter Estimates for Stringency of CPs

More than 75 percent		B	Std. Error	Wald	df	Sig.	Exp(B)
25 percent and less	Intercept	-2.977	1.205	6.106	1	.013	
	Resource-based (against non-resource-based)	.854	.671	1.619	1	.203	2.349
	Malaysian-owned (against foreign owned)	.912	.926	.971	1	.324	2.490
	Less than 5 years (against "more than 10 years)	.249	.958	.067	1	.795	1.282
	5-10 years (against "more than 10 years)	1.317	.979	1.810	1	.179	3.732
	Small size (against large size)	.782	.761	1.056	1	.304	2.187
	Medium size (against large size)	2.124	.949	5.007	1	.025	8.366
	CPs stringent (against CPs not stringent)	2.600	.849	9.388	1	.002	13.464
26 – 50 percent	Intercept	-3.521	1.274	7.638	1	.006	
	Resource-based (against non-resource-based)	1.483	.691	4.611	1	.032	4.406
	Malaysian-owned (against foreign owned)	-.206	.913	.051	1	.821	.813
	Less than 5 years (against "more than 10 years)	.361	.990	.133	1	.716	1.435
	5-10 years (against "more than 10 years)	.777	1.036	.562	1	.454	2.174
	Small size (against large size)	1.133	.829	1.868	1	.172	3.106
	Medium size (against large size)	3.191	1.007	10.045	1	.002	24.301
	CPs stringent (against CPs not stringent)	3.420	.952	12.906	1	.000	30.566
51 – 75 percent	Intercept	-5.725	1.723	11.033	1	.001	
	Resource-based (against non-resource-based)	2.203	.788	7.823	1	.005	9.054
	Malaysian-owned (against foreign owned)	1.767	1.334	1.754	1	.185	5.853
	Less than 5 years (against "more than 10 years)	-.356	1.210	.087	1	.768	.700
	5-10 years (against "more than 10 years)	1.418	1.091	1.687	1	.194	4.127
	Small size (against large size)	.586	.937	.391	1	.532	1.797
	Medium size (against large size)	2.292	1.089	4.428	1	.035	9.892
	CPs stringent (against CPs not stringent)	3.026	1.039	8.477	1	.004	20.620

Notes: Reference category is "more than 75 percent".
Model fitting: p<0.05 for chi-square 46.112. Cox and Snell: 0.276; Nagelkerke: 0.298; McFadden: 0.125

Table 6.8: Likelihood Ratio Test

Effect	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	148.297[a]	.000	0	.
Firm Type	159.348	11.051	3	.011
Firm Ownership	153.742	5.445	3	.142
Firm Age	152.453	4.156	6	.656
Firm Size	162.385	14.088	6	.029
CPs stringent	166.103	17.806	3	.000

a. This Reduced Model Is Equivalent To The Final Model Because Omitting The Effect Does Not Increase The Degrees Of Freedom.

For the ASEAN market, resource-based firms are most likely to be in the '26-50 percent' and '51-75 percent' export level groups that perceive CPs as stringent compared

to the reference group. With regards to firm size, small and medium sized firms in all markets perceive CPs as stringent to their exports compared to the large sized firms. While there is little literature on Malaysian exporters' experience of the CPs in -export markets, the existing literature generally informs that customs and administrative procedures are found to pose a problem for exporters. Lengthy CPs including time delays may hinder trade between countries (Wilson, 2007) and prevent firms from entering export markets (Nordas et al., 2006). The need for simple and transparent documents, procedures and facilities across border transactions has long been recognised in the revised Kyoto Convention of the World Customs Organisation. CPs are identified as trade barriers as it has a potentially adverse impact on exporting activity (World Bank, 2009).

There is little literature linking CPs and export by firm size. Some studies have included firm size such as in USITC (2014) which found that US SMEs are affected by the CPs in EU. However, few studies show the situation of developing countries' SMEs with regards to CPs in export markets.

It is further noted that smaller US firms have minimal resources which cripples them when managing the complex EU CPs . There are many studies on trade facilitation (CPs included) and trade flow in country context, but they are prone to omit firm size. However, in the context of Malaysian exporters by firm size, such a study is practically non-existant . Hence, this study throws some light on how the varying firm sizes in Malaysia are affected by CPs in their export destination. In a study by Liu and Yue (2009), involving exporters (of which Malaysia is one of them) of cut flowers to Japan, it was found that Japan's strict customs administrative procedures (along with strict SPS measures) have become a trade barrier.

Findings from this study t tend to concur with OECD (2005) that CPs are considered as one of the most problematic NTMs faced by developing countries. Malaysia, being a developing country, could be affected by CP regulations imposed by

export countries. However, the findings of this study show that not all export size firms from Malaysia find CP as stringent. Firms exporting more than 75 percent tend to not regard CPs as barrier. However, firms that export less than 75 percent find the CPs a hurdle to trade. Trade facilitation has effects on the extensive margin of trade and therefore affects the range of goods that can be traded (Persson, 2013).

This gives a more plausible argument pertaining to this study's findings that firms with less than 75 percent exports may experience higher costs of exports due to cumbersome trade facilitation imposed at the border of exporting countries. Larger size export firms have the financial strength to withstand the customs related costs as it could only be a small fraction of the total export costs for them. Fliess and Kim (2008) noted that SMEs which are predominantly the study samples, identified CPs as being the leading NTMs to barrier in trade. This study's findings seem to be in tandem with Fliess and Kim's where Malaysian exporters who come from mainly small and medium sized firms, find CPs stringent.

Table 6.9 shows how CPs are most likely to be a concern for Malaysian exporters in almost all of its export markets. Even in the ASEAN region where Malaysian is a member, CPs are perceived to be stringent by firms with less than 75 percent export levels. It seems that among the export markets, China's CPs are not a concern for firms exporting more than 50 percent. The above discussions and arguments about the effect of CPs are supported by interview feedback whereby the majority of the firms interviewed cited lengthy and stringent CPs as major impediment to their entry into various export markets. A few firms reported that the lack of standardised and transparent CPs in ASEAN and China markets has caused them to incur losses as they were caught off-guard with unexpected new procedures and documentation.

Table 6.9: Summary Results of Stringency of CPs by Export Markets

Percent Export	B	Std. Error	Wald	df	Sig.	Exp (B)
US						
25 percent and less	2.265	.830	7.439	1	.006	9.632
26 -50 percent	3.081	.932	10.921	1	.001	21.783
51 – 75 percent	2.636	1.024	6.626	1	.010	13.963
EU						
25 percent and less	1.662	.702	5.605	1	.018	5.271
26 -50 percent	2.570	.827	9.659	1	.002	13.063
51 – 75 percent	2.388	1.013	5.561	1	.018	10.896
Japan						
25 percent and less	2.115	.848	6.221	1	.013	8.292
26 -50 percent	2.950	.943	9.777	1	.002	19.096
51 – 75 percent	2.500	1.036	5.825	1	.016	12.183
China						
25 percent and less	1.941	1.105	3.084	1	.079	6.963
26 -50 percent	2.881	1.102	6.830	1	.009	17.837
51 – 75 percent	1.534	1.214	1.597	1	.206	4.639
ASEAN						
25 percent and less	1.293	.736	3.087	1	.079	3.643
26 -50 percent	2.124	.792	7.183	1	.007	8.360
51 – 75 percent	1.511	.690	4.798	1	.028	4.533

Notes: Reference category is "more than 75 percent".
See Appendices A11, A12, A13, A14 and A15 for detailed results.

6.4.2 Stringency of ONTMs

The multinomial equations for stringency of ONTMs are restated below;

$$Y_{1\text{-}4} = \alpha + \beta_1 FIRMTYPE + \beta_2 FIRMOWNERSHIP + \beta_3 FIRMAGE + \beta_4 FIRMSIZE + \beta_5 STRONTM \quad (3.15)$$

$$Y_{1\text{-}4} = \alpha + \beta_1 FIRMTYPE + \beta_2 FIRMOWNERSHIP + \beta_3 FIRMAGE + \beta_4 FIRMSIZE + \beta_5 STRONTM_{US.EU,Japan,China,ASEAN} \quad (3.22)$$

The summary of the parameter estimates is reported in Table 6.10. It suggests that the stringency of ONTMs are significantly related to two export groups, "25 percent and less" and "26-50 percent". In the export destinations, there is some variation in the results. ONTMs in Japan are perceived to be stringent for exporters exporting 75 percent and below of their total output (three export level groups), while for the US and EU market, exporters within the category of '25 percent and less' and '26-50 percent' of export sales find the ONTMs to be stringent.

For exports to ASEAN market, only firms in the '5 percent and less' are most likely to perceive ONTMs as stringent in their exports. Small and medium-sized firms that export 50 percent and below are most likely to perceive ONTMs as being stringent. ONTMs are barriers which include i) language barrier, ii) cultural differences (not language), iii) not having an office or site in an export market, and iv) a bias or preference to do business with firms in their own country. One of the researched ONTMs is the language barrier. The findings produced mixed outcomes. Lautanen (2000) and Obben and Magagula (2003) found that firms with good mastery of a foreign language are likely to become exporters. However, other studies disregard the relationship between importance of language competency and exporting behaviour of small firms (Daniels and Guyboro, 1976, Ursic and Czinkota, 1989 and Williams, 2011). Language and religion differences (Anderson and Marcouller, 2002 and Dow and Karunaratna, 2006) that were used as cultural proxies in the gravity model examining bilateral trade concur with an earlier empirical study done by Beckerman (1956) that trade decreases with cultural differences. Moon and Song (2015) support this argument noting that cultural boundaries indeed pose a barrier to trade flow (export of product from one cultural community to another).

Further support is garnered from Chandrasekaran and Tellis (2008) where the authors argue that cultural environment in the export market is an important determinant of a new product's success. Interestingly, macro-level studies of the impact of cultural distance on bilateral trade seems to ignore insights from firm level studies on this research area.

Table 6.10: Parameter Estimates for Stringency of ONTMs

More than 75 percent		B	Std. Error	Wald	df	Sig.	Exp(B)
25 percent and less	Intercept	-1.103	.851	1.680	1	.195	
	Resource-based (against non-resource-based)	.605	.643	.885	1	.347	1.831
	Malaysian-owned (against foreign owned)	.424	.852	.248	1	.618	1.529
	Less than 5 years (against "more than 10 years)	-.036	.948	.001	1	.970	.965
	5-10 years (against "more than 10 years)	.839	.778	1.161	1	.281	2.313
	Small size (against large size)	1.830	.784	5.446	1	.020	6.235
	Medium size (against large size)	1.204	.678	3.149	1	.076	3.332
	ONTMs stringent (against ONTMs not stringent)	1.692	.725	5.452	1	.020	5.433
26 - 50 percent	Intercept	-.783	.788	.988	1	.320	
	Resource-based (against non-resource-based)	1.228	.652	3.548	1	.060	3.415
	Malaysian-owned (against foreign owned)	-.724	.796	.827	1	.363	.485
	Less than 5 years (against "more than 10 years)	-.015	.969	.000	1	.988	.985
	5-10 years (against "more than 10 years)	.347	.829	.175	1	.676	1.414
	Small size (against large size)	2.168	.832	6.794	1	.009	8.744
	Medium size (against large size)	1.805	.707	6.521	1	.011	6.081
	ONTMs stringent (against ONTMs not stringent)	1.789	.741	5.828	1	.016	5.981
51 - 75 percent	Intercept	-2.864	1.280	5.003	1	.025	
	Resource-based (against non-resource-based)	1.540	.737	4.364	1	.037	4.663
	Malaysian-owned (against foreign owned)	1.135	1.233	.848	1	.357	3.111
	Less than 5 years (against "more than 10 years)	-.190	1.160	.027	1	.870	.827
	5-10 years (against "more than 10 years)	1.050	.893	1.383	1	.240	2.857
	Small size (against large size)	.737	.973	.573	1	.449	2.089
	Medium size (against large size)	1.536	.785	3.831	1	.050	4.645
	ONTMs stringent (against ONTMs not stringent)	1.322	.818	2.611	1	.106	3.753

Notes: Reference category is "more than 75 percent".
Model fitting: p<0.05 for chi-square 35.808. Cox and Snell: 0.222 Nagelkerke: 0.240; McFadden: 0.097

Table 6.11: Likelihood Test Ratio

Effect	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	177.342[a]	.000	0	.
Firm Type	184.231	6.889	3	.076
Firm Ownership	182.560	5.218	3	.157
Firm Age	179.924	2.582	6	.859
Firm Size	192.447	15.105	6	.019
ONTMs stringent	185.189	7.847	3	.049

a. This Reduced Model Is Equivalent To The Final Model Because Omitting The Effect Does Not Increase The Degrees Of Freedom.

Slangen et al. (2011), in their firm level study found that firms having foreign affiliates (which in turn do the sales) experience cultural difference as more of a barrier than them having to export directly to the export markets.

The authors argued that having an affiliate in a foreign country will have impact on cost. They further noted that cost increases at a slower rate with cultural difference if firms directly export to foreign markets than marketing through their affiliates based in the export market.

Similar to this discussion, a firm level study of Malaysian exporters provides deeper meaning on their plight and behaviour with regards to exports. Rarely has such a study on export intensity been done. The overall findings show that Malaysian exporters that export less than 50 percent find that the ONTMs (encompassing language, other cultural factors (including religion), no affiliates and biasness to domestic firms) a barrier to trade, thus making a significant contribution in this field of research. It is also imperative to note that this finer measure should be done in the study of bilateral trade instead of using total export variable. Eastin et al. (2004) found that exporters who have office sites in the export market tend to experience improved export performance compared to those that do not have one.

Eastin's findings supports this study's findings, where "not having an office site' is proven to be one of the variables in the "ONTMs" variable where Malaysian firms that export less than 50 percent find ONTMs as a barrier. The situation of not having an office site could explain the predicament of Malaysian firms penetrating the Japanese market where the three export groups which are "25 percent and less", "26-50 percent" and "51-75 percent", find ONTMs as a barrier. Another variable included in the ONTMs is the "a bias or preference to do business with firms in their own country". It implies that the government's actions through its trade regulation, procurement procedures, imposition of taxes and so forth appears to benefit domestic firms more than importers from foreign

countries. Fliess and Kim (2008) found that firms that responded to surveys identified preferential treatment of domestic producers by regulators or government as posing a barrier to trade.

The authors further noted that manipulating the procurement procedure to favour domestic firm is a clear bias treatment. They further noted that when domestic firms produce comparable goods (with regards to importers), subsidies and bid preference are some advantages bestowed to them which then becomes a NTM to be overcome by market importers. Through this NTM, the domestic firms acquire the edge to compete with importers. This study on Malaysian exporters who export below 50 percent seem to find ONTMs as a barrier in their exports. This bias to domestic firms could have impacted the Malaysian exporters especially those that export below 50 percent.

Table 6.12 shows the summary findings for the stringency of ONTMs by export markets. Malaysian exporters find a significant correlation between export levels below 75 percent and Japanese market. EU and ASEAN markets are considered less stringent in this respect as only firms having export level '25 percent and less' are significantly related. China and the US markets are found to be stringent by firms with export level less than 50 percent. Most firms interviewed informed that exporting to countries like US and EU find ONTMs not stringent as English language is the main medium of communication in economic transactions, unlike in Japan. The interview results further illustrated that in Japan, the time taken to conclude a transaction is lengthy as the language used is not English and this poses a barrier to trade .

Table 6.12: Summary Results for Stringency of ONTMs by Export Markets

Percent Export	B	Std. Error	Wald	df	Sig.	Exp (B)
US						
25 percent and less	1.311	.579	5.124	1	.024	3.711
26 -50 percent	2.009	.621	10.481	1	.001	7.455
51 – 75 percent	-.338	.688	.241	1	.623	.713
EU						
25 percent and less	1.173	.576	4.146	1	.042	3.233
26 -50 percent	.093	.530	.031	1	.861	1.097
51 – 75 percent	-.574	.602	.910	1	.340	.563
Japan						
25 percent and less	2.292	.838	7.487	1	.006	9.896
26 -50 percent	1.915	.848	5.095	1	.024	6.788
51 – 75 percent	2.134	.924	5.340	1	.021	8.451
China						
25 percent and less	2.027	.721	7.895	1	.005	7.588
26 -50 percent	1.571	.732	4.606	1	.032	4.810
51 – 75 percent	1.316	.823	2.559	1	.110	3.730
ASEAN						
25 percent and less	1.373	.566	5.879	1	.015	3.947
26 -50 percent	.852	.576	2.182	1	.140	2.343
51 – 75 percent	.914	.673	1.845	1	.174	2.494

Notes: Reference category is "more than 75 percent". See Appendices A16, A17, A18, A19 and A20 for detailed results.

6.4.3 Stringency of PMs

The multinomial equation for stringency of PMs is restated below;

$$Y_{1\text{-}4} = \alpha + \beta_1 FIRMTYPE + \beta_2 FIRMOWNERSHIP + \beta_3 FIRMAGE + \beta_4 FIRMSIZE + \beta_5 STRPM \quad (3.16)$$

The equation for stringency of PM for export markets is restated below;

$$Y_{1\text{-}4} = \alpha + \beta_1 FIRMTYPE + \beta_2 FIRMOWNERSHIP + \beta_3 FIRMAGE + \beta_4 FIRMSIZE + \beta_5 STRPM_{US.EU,Japan,China,ASEAN} \quad (3.23)$$

Table 6.13 shows that the stringency of PMs is significantly related to three export groups, '25 percent and less', '51 – 75 percent' and '51-75 percent'. Looking at export markets (refer to Table 6.15), Malaysian exporters that export more than 75 percent to all the export markets do not perceive PMs as stringent. In the case of exports to ASEAN, PMs are only an issue for those exporting 25 percent and less of their output. Exporters of the three groups i.e. '25 percent and less', '51 – 75 percent' and '51-75 percent' perceive PMs in the US, EU and Japan markets as stringent. As in the case of other

measures, the small and medium-size firms that exports 75 percent and below perceive PMs as stringent compared to large-size firms and as those that export more than 75 percent.

Only firms in the export groups of '25 percent and less' and '26-50 percent' find PMs in China market as being stringent. It was found in the interview session that firms that export more than 50 percent do not find PMs in the Chinese market to be a constraint for trade as they have the resources to manage the barrier. They also stated that generally, China's public measures are more of a concern than PMs as these measures are not regulated fully and its recognition by the Chinese government is still vague.

PMs or standards introduced by private organisations and institutions are becoming important in the context of global trade (Henson and Hooker, 2001; Henson, 2004 and Fulponi, 2007). For example, ISO (Internal Organisation for Standards) a non-governmental organisation, is the world's largest developer and publisher of international standards. Firms that aim to differentiate their products in international markets complywith private standards to have product safety and quality attributes endorsed by these internationally recognised organisations (Henson and Reardon, 2005). The authors further noted that public standards are unlikely to provide sufficient scope for product differentiation.

In many situations, public measures or standards are less stringent than private standards. Vigani and Olper (2013) inform that the majority of retailers in EU abide by the requirements of private measure on genetically modified organism that is mandated by EU regulations. Other examples include private standards imposed by organisations like British Retail Consortium (BRC) or Global Partnership for Good Agriculture Practices (GLOBALGAP) which are more stringent than public standards in EU. Almost all retailers in EU adopt these standards to be accepted in the marketplace. Hence, Malaysian exporters entering into EU markets, likewise, must adopt these relatively

stringent private standards to be competitive. The same is true for businesses in EU adopting the private standard by this type of benchmarking, for instance, Global Food Safety Initiative (GFSI) for food safety and sustainability reasons (Fulponi, 2007). Consumers in EU have accepted these stricter private standards as a de facto minimum that businesses must comply.

The same point applies to tuna fish business in US where all retailers adopt the voluntary standard in the US market (Smith, 2009). While private standards ensure that more consumers buy the product, for producers they have to incur compliance costs making the production costs higher (Vandermoortele and Deconinck, 2013). Jaffee and Henson (2004) and the World Bank (2005) found that costs of compliance to standards can impede trade flows, particularly for poorer countries. The authors further noted that the inevitable investment and additional 'costs of compliance' to penetrate high income markets such as the US, EU and Japan renders exporters from developing countries to be incapable of competing with their more developed counterparts.

In obtaining ISO certification series, the costs can be substantial as there is auditing costs to be considered as well. In the US, the cost for auditing can range from $239 to $1,372 per employee (Darnall and Edwards, 2006). Montiel and Husted (2009) and Blackman and Guerrero (2012) studied the drivers of ISO 140001 certification of exporters in developing countries. Both studies found that exporters are more likely to be certified. Studies by Nishitani (2009), King et al. (2005) and Arimura et al. (2008) found positive correlation between firm size and certification. In this study, not having ISO certification may explain why Malaysian exporters find private standards stringent, especially in EU, the USA and Japanese markets.

Table 6.13: Parameter Estimates for Stringency of PMs

More than 75 percent		B	Std. Error	Wald	df	Sig.	Exp(B)
25 percent and less	Intercept	-2.007	1.154	3.025	1	.082	
	Resource-based (against non-resource-based)	.141	.631	.050	1	.824	1.151
	Malaysian-owned (against foreign owned)	1.329	.995	1.782	1	.182	3.777
	Less than 5 years (against "more than 10 years)	-.042	.651	.004	1	.949	.959
	5-10 years (against "more than 10 years)	-1.585	.801	3.914	1	.048	.205
	Small size (against large size)	1.482	.717	4.279	1	.039	4.403
	Medium size (against large size)	1.166	.823	2.004	1	.157	3.208
	PMs stringent (against PMs not stringent)	3.209	.939	11.689	1	.001	24.764
26 – 50 percent	Intercept	-2.555	1.183	4.663	1	.031	
	Resource-based (against non-resource-based)	1.250	.614	4.144	1	.042	3.491
	Malaysian-owned (against foreign owned)	.853	.971	.772	1	.380	2.348
	Less than 5 years (against "more than 10 years)	-1.254	.719	3.045	1	.081	.285
	5-10 years (against "more than 10 years)	-1.047	.722	2.103	1	.147	.351
	Small size (against large size)	2.473	.788	9.850	1	.002	11.857
	Medium size (against large size)	2.396	.854	7.871	1	.005	10.981
	PMs stringent (against PMs not stringent)	3.346	.955	12.269	1	.000	28.399
51 – 75 percent	Intercept	-1.341	1.284	1.091	1	.296	
	Resource-based (against non-resource-based)	-.057	.737	.006	1	.939	.945
	Malaysian-owned (against foreign owned)	.845	1.109	.581	1	.446	2.329
	Less than 5 years (against "more than 10 years)	-1.612	.872	3.415	1	.065	.199
	5-10 years (against "more than 10 years)	-1.896	.893	4.505	1	.034	.150
	Small size (against large size)	.152	.883	.030	1	.864	1.164
	Medium size (against large size)	1.600	.854	3.509	1	.061	4.952
	PMs stringent (against PMs not stringent)	2.869	1.009	8.091	1	.004	17.626

Notes: Reference category is "more than 75 percent".
Model fitting: p<0.05 for chi-square 62.407 Cox and Snell: 0.354 Nagelkerke: 0.381; McFadden: 0.165

Table 6.14: Likelihood Ratio Test

Effect	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	162.126[a]	.000	0	.
Firm Type	171.179	9.053	3	.029
Firm Ownership	163.853	1.727	3	.631
Firm Age	178.170	16.043	6	.014
Firm Size	182.433	20.306	6	.002
PMs Stringent	184.871	22.745	3	.000

a. This reduced model is equivalent to the final model because omitting the effect does not increase the degrees of freedom.

Table 6.15: Summary Results for Stringency of PMs by Export Markets

Percent Export	B	Std. Error	Wald	df	Sig.	Exp (B)
US						
25 percent and less	1.266	.708	3.198	1	.074	3.548
26 -50 percent	2.192	.796	7.588	1	.006	8.953
51 – 75 percent	1.310	.670	3.827	1	.050	3.707
EU						
25 percent and less	1.229	.709	3.006	1	.083	3.417
26 -50 percent	1.997	.778	6.585	1	.010	7.368
51 – 75 percent	1.372	.670	4.186	1	.041	3.943
Japan						
25 percent and less	1.297	.707	3.370	1	.066	3.659
26 -50 percent	2.088	.782	7.136	1	.008	8.071
51 – 75 percent	1.304	.672	3.770	1	.052	3.685
China						
25 percent and less	1.654	.692	5.719	1	.017	5.230
26 -50 percent	1.869	.778	5.774	1	.016	6.485
51 – 75 percent	1.078	.677	2.537	1	.111	2.940
ASEAN						
25 percent and less	1.335	.567	5.546	1	.019	3.799
26 -50 percent	.817	.558	2.145	1	.143	2.263
51 – 75 percent	.209	.659	.101	1	.751	1.233

Notes: Reference category is "more than 75 percent." See Appendices A21, A22, A23, A24 and A25 for detailed results.

Anders and Caswell (2009) found that compliance to standards augers well for large and more established firms, but is a barrier for small exporters. Fliess and Kim (2008) support Anders and Caswell's findings noting that multitude standards in EU markets act as a competitive advantage for larger firms but a barrier to SMEs.

6.4.4 Effect of InfoAsym

The multinomial equations for the effect of InfoAsym are restated below

$$Y_{1\text{-}4} = \alpha + \beta_1 FIRMTYPE + \beta_2 FIRMOWNERSHIP + \beta_3 FIRMAGE + \beta_4 FIRMSIZE + \beta_5 INFOASYM \quad (3.17)$$

$$Y_{1\text{-}4} = \alpha + \beta_1 FIRMTYPE + \beta_2 FIRMOWNERSHIP + \beta_3 FIRMAGE + \beta_4 FIRMSIZE + \beta_5 INFOASYM_{\text{US.EU,Japan,China,ASEAN}} \quad (3.24)$$

Table 6.16 shows the parameter estimates for InfoAsym. All three export levels – '25 percent and less', '26-50 percent' and '51-75 percent' compared to the reference group i.e. "more than 75 percent", experience InfoAsym as it is significantly related to their export levels. Guadalupe and Perez-Gonzalez (2006) stated that improved

information, results in the reduction of agency cost and produces accurate relative performance evaluation. Labaste (2005) and Porto et al. (2011) argued that exporters of fresh products consider promoting information sharing as a strategic priority.

Table 6.16: Parameter Estimates for Effect of InfoAsym

More than 75 percent		**B**	**Std. Error**	**Wald**	**df**	**Sig.**	**Exp(B)**
25 percent and less	Intercept	-2.732	1.162	5.532	1	.019	
	Resource-based (against non-resource-based)	1.078	.722	2.226	1	.136	2.938
	Malaysian-owned (against foreign owned)	1.507	1.036	2.117	1	.146	4.515
	Less than 5 years (against "more than 10 years)	-.096	1.307	.005	1	.942	.909
	5-10 years (against "more than 10 years)	.842	.988	.728	1	.394	2.322
	Small size (against large size)	2.021	.883	5.244	1	.022	7.549
	Medium size (against large size)	1.752	.960	3.333	1	.068	5.768
	InfoAsym effect (against InfoAsym no effect)	1.460	.752	3.771	1	.052	4.307
26 - 50 percent	Intercept	-2.888	1.129	6.544	1	.011	
	Resource-based (against non-resource-based)	1.874	.773	5.877	1	.015	6.512
	Malaysian-owned (against foreign owned)	-.908	.887	1.048	1	.306	.403
	Less than 5 years (against "more than 10 years)	.273	1.300	.044	1	.834	1.314
	5-10 years (against "more than 10 years)	-.021	1.098	.000	1	.985	.979
	Small size (against large size)	2.685	1.004	7.155	1	.007	14.654
	Medium size (against large size)	2.989	1.065	7.871	1	.005	19.870
	InfoAsym effect (against InfoAsym no effect)	2.800	.837	11.185	1	.001	16.441
51 - 75 percent	Intercept	-.995	.909	1.198	1	.274	
	Resource-based (against non-resource-based)	1.248	.675	3.418	1	.064	3.483
	Malaysian-owned (against foreign owned)	.229	.804	.081	1	.776	1.257
	Less than 5 years (against "more than 10 years)	.045	1.253	.001	1	.972	1.046
	5-10 years (against "more than 10 years)	.628	.946	.441	1	.507	1.874
	Small size (against large size)	1.311	.834	2.471	1	.116	3.708
	Medium size (against large size)	2.095	.880	5.662	1	.017	8.125
	InfoAsym effect (against InfoAsym no effect)	1.679	.703	5.693	1	.017	5.358

Notes: Reference category is "more than 75 percent".
Model fitting: p<0.05 for chi-square 49.234. Cox and Snell: 0.291; Nagelkerke: 0.316; McFadden: 0.136

Table 6.17: Likelihood Ratio Test

Effect	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	166.909[a]	.000	0	.
Firm Type	173.443	6.534	3	.088
Firm Ownership	177.189	10.280	3	.016
Firm age	169.478	2.569	6	.861
Firm Size	183.953	17.044	6	.009
InfoAsym Effect	180.425	13.516	3	.004

a. This reduced model is equivalent to the final model because omitting the effect does not increase the degrees of freedom.

Information sharing reduces asymmetry of information between exporter and buyer (import market) where both parties have the same information with regards to product standards, product quality, process and the likes.

Piercy et al. (1997) noted that information sharing between a product supplier and a buyer is the key success in their business relationship. According to Huang et al. (2003), information sharing in a supply chain includes sharing product information, process information, quality information, resource information and cost information; all of which are critical for export performance. The absence of or inaccurate information will result in InfoAsym which will definitely affect exporters mainly in the aspect of costs and time in marketing a product.

Table 6.18: Summary Results for Effect of InfoAsym by Export Markets

Percent Export	B	Std. Error	Wald	df	Sig.	Exp (B)
US						
25 percent and less	1.476	.750	3.869	1	.049	4.376
26 -50 percent	2.842	.839	11.473	1	.001	17.150
51 – 75 percent	1.765	.704	6.288	1	.012	5.843
EU						
25 percent and less	1.525	.789	3.733	1	.053	4.595
26 -50 percent	2.605	.930	7.838	1	.005	13.529
51 – 75 percent	2.320	1.059	4.798	1	.028	10.172
Japan						
25 percent and less	1.140	.561	4.128	1	.042	3.126
26 -50 percent	1.433	.564	6.442	1	.011	4.190
51 – 75 percent	.402	.644	.391	1	.532	1.495
China						
25 percent and less	1.537	.662	5.391	1	.020	4.652
26 -50 percent	1.158	.655	3.123	1	.077	3.182
51 – 75 percent	.695	.758	.840	1	.359	2.003
ASEAN						
25 percent and less	1.821	.596	9.325	1	.002	6.181
26 -50 percent	.909	.581	2.449	1	.118	2.483
51 – 75 percent	.920	.692	1.766	1	.184	2.509

Notes: Reference category is "more than 75 percent." See Appendices A26, A27, A28, A29 and A30 for detailed results.

As can be seen in table 6.18, except for the reference group ('more than 75 percent'), firms in all other three export levels face information asymmetry. It can also be noted that SMEs compared to larger-sized firms are mostly affected in these export level group. With regards to export markets, Malaysian firms exporting to the US and EU

market face information asymmetry. Feedback from the interview sessions cited distance as being one key reason as to why many exporters do not obtain information accurately and on time. This reason could be also justified as information asymmetry in Japan, China and ASEAN markets which is experienced by two export level groups which are '25 percent and less' and '26-50 percent'.

6.5 NTM TYPES AND EXPORTS

This section discusses the effects of NTMs as classified by Haveman et al. (2003) which are faced by Malaysian exporters. The conceptual model in chapter 3 considers these effects important in the study of NTMs for Malaysian exporters. Findings for the NTM types types faced by Malaysian exporters are stated first, followed by a discussion on the effects of these findings for each export market.

As discussed in chapter 2 (Literature Review), Haveman et al. (2003) classified NTMs into four categories or types – price effects, quantity restrictions, quality restrictions and threat of retaliation. These NTM types are a concern for exporters especially in managing resources and export performance. Exporters with less resources may not be able to manage these NTM types and this may impact their export trade.

In the case of Malaysian exporters, there is a real scarcity of research on Haveman's et al's NTM types faced by exporters, especially at the firm level. This study seeks to fill the gap that exists in this body of knowledge by examining what are the NTM types faced by Malaysian exporters. Table 6.19 shows the parameter estimates of stringency of NTMs and its types. Stringency of NTMs is significantly related to price effects, quantity reduction and quality restrictions compared to threat of retaliation which is used as a reference group. The empirical models for examining the four NTM types (represented by $Z_{1\text{-}4}$) and for each export are restated below;

$$Z_{1\text{-}4} = \alpha + \beta_1 FIRMTYPE + \beta_2 FIRMOWNERSHIP + \beta_3 FIRMAGE + \beta_4 FIRMSIZE + \beta_5 STRNTM \quad (3.25)$$

$$Z_{1\text{-}4} = \alpha + \beta_1 FIRMTYPE + \beta_2 FIRMOWNERSHIP + \beta_3 FIRMAGE + \beta_4 FIRMSIZE + \beta_5 STRNTM_{US,EU,Japan,\ China,\ ASEAN} \quad (3.26)$$

Table 6.19 shows the four NTM types due to stringency of NTMs in the export markets experienced by exporters whereas Table 6.21 shows the NTM types by export markets. It seems that price effects, quantity reduction and quality restrictions are found to be significant. However, analyses of the markets show that all NTM types are faced by Malaysian exporters in the US, EU and Japanese markets except for threat of retaliation.

In the China market, exporters are mainly concerned with price effects and quality restrictions. The elasticity of demand needs to be factored in when discussing the price effects. In an elastic demand situation, the rise in price may not affect demand but will increase trade value. When there is an elastic demand situation, increase in price will lower quantity demanded, thus exporters in this situation face negative impact on trade flow and value. In the interview results of firms that export to the USA, EU and Japanese markets, it was discovered that stringent measures raised cost which then caused prices to increase. The feedback suggests that price effects often lead to quantity restrictions products with elastic demand situation.

Though Malaysia is a member of the ASEAN trade pact, its exporters still face price effects. The price effects could be due to higher compliance costs and costs related to CPs. Interview respondents from some firms exporting to ASEAN markets, stated that besides being required to comply with standards' requirements, they also found CPs in ASEAN markets to be a costly affair. From the findings, it can be summarised that quality restrictions are not significantly related and thus harmonised standards and other requirements are put in place to promote trade among ASEAN members.

Table 6.19: Stringency of NTM Types- Price Effects, Quantity Reduction, Quality Restrictions and Threat of Retaliation

Threat of retaliation		B	Std. Error	Wald	df	Sig.	Exp(B)
Price effects	Intercept	-2.393	.754	10.065	1	.002	
	Resource-based (against non-resource-based)	.569	.533	1.140	1	.286	1.767
	Malaysian-owned (against foreign owned)	1.535	.566	7.352	1	.007	4.641
	Less than 5 years (against "more than 10 years)	-.260	.663	.153	1	.695	.771
	5-10 years (against "more than 10 years)	.263	.629	.175	1	.676	1.301
	Small size (against large size)	.081	.615	.017	1	.896	1.084
	Medium size (against large size)	1.184	.651	3.311	1	.069	3.268
	NTMs stringent (against NTMs not stringent)	1.738	.559	9.655	1	.002	5.688
Quantity reduction	Intercept	-1.076	.631	2.907	1	.088	
	Resource-based (against non-resource-based)	-.457	.489	.873	1	.350	.633
	Malaysian-owned (against foreign owned)	1.017	.522	3.795	1	.051	2.764
	Less than 5 years (against "more than 10 years)	.643	.583	1.216	1	.270	1.901
	5-10 years (against "more than 10 years)	.043	.632	.005	1	.946	1.044
	Small size (against large size)	-.360	.590	.372	1	.542	.698
	Medium size (against large size)	.611	.620	.972	1	.324	1.843
	NTMs stringent (against NTMs not stringent)	1.609	.524	9.439	1	.002	4.999
Quality restrictions	Intercept	-3.985	1.036	14.785	1	.000	
	Resource-based (against non-resource-based)	1.285	.665	3.735	1	.053	3.613
	Malaysian-owned (against foreign owned)	.337	.640	.277	1	.599	1.401
	Less than 5 years (against "more than 10 years)	.745	.682	1.193	1	.275	2.106
	5-10 years (against "more than 10 years)	-.356	.855	.173	1	.677	.701
	Small size (against large size)	1.379	.789	3.052	1	.081	3.969
	Medium size (against large size)	1.861	.838	4.931	1	.026	6.428
	NTMs stringent (against NTMs not stringent)	2.325	.667	12.140	1	.000	10.224

Note: Reference category is "threat of retaliation". Model fitting: $p < 0.05$ for chi-square 49.314. Cox and Snell: 0.292; Nagelkerke: 0.312; McFadden: 0.127

Table 6.20: Likelihood Ratio Test

Effect	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	226.049[a]	.000	0	.
Firm Type	236.516	10.467	3	.015
Firm Ownership	235.571	9.522	3	.023
Firm Age	232.251	6.202	6	.401
Firm Size	235.973	9.924	6	.128
NTMs Stringent	244.541	18.492	3	.000

a. This reduced model is equivalent to the final model because omitting the effect does not increase the degrees of freedom.

Table 6.21: Stringency of NTM Types- Price Effects, Quantity Reduction, Quality Restrictions, and Threat of Retaliation – by Export Markets

NTM Types	B	Std. Error	Wald	df	Sig.	Exp (B)
US						
Price Effects	1.581	.549	8.286	1	.004	4.858
Quantity Restrictions	1.522	.518	8.649	1	.003	4.583
Quality Restrictions	2.061	.645	10.217	1	.001	7.852
EU						
Price Effects	1.607	.544	8.726	1	.003	4.987
Quantity Restrictions	1.539	.514	8.962	1	.003	4.660
Quality Restrictions	2.124	.663	10.278	1	.001	8.366
Japan						
Price Effects	1.671	.661	6.393	1	.011	5.317
Quantity Restrictions	1.359	.673	4.083	1	.043	3.893
Quality Restrictions	3.320	.719	21.321	1	.000	27.659
China						
Price Effects	1.242	.624	3.960	1	.047	3.464
Quantity Restrictions	.876	.634	1.909	1	.167	2.401
Quality Restrictions	2.931	.684	18.374	1	.000	18.742
ASEAN						
Price Effects	1.162	.510	5.184	1	.023	3.196
Quantity Reduction	.087	.430	.041	1	.840	1.091
Quality Restrictions	.589	.735	.641	1	.423	1.802

Notes: Reference category is "threat of retaliation". See Appendices A31, A32, A33, A34 and A35 for detailed results.

6.6 SUMMARY OF KEY FINDINGS

Firm level studies involving Malaysian exporters are not available. Studies only exists on country level. This study, therefore, makes a significant contribution to this end. Overall, as reflected in the findings, Malaysian exporters especially those that export less than 75 percent find NTMs in the export markets stringent. Small and medium sized firms tend to be affected more than large firms in this aspect.

Countries for which Malaysian exporters find NTMs stringent are the US, EU, and Japan. These developed countries put in place NTMs that the Malaysian exporters find stringent to comply with, largely due to high costs of compliance and fewer resources which are able to handle the NTMs. By being unable to adhere to these NTMs, these firms become non-competitive in the export markets. However, exporters that export more than 75 percent find NTMs in their export destination as not being stringent. This could be because these firms have the resources and capabilities to withstand the NTMs' pressures.

Compliance to NTMs make these firms more competitive and able to sustain their exports. Firms having export levels below 75 percent seem to be affected by information asymmetry and this is specifically a concern in the US and EU markets compared to firms that export more than 75 percent. Finally, the NTM effects are real for Malaysian exporters. Price effects, quantity reduction and quality restrictions are a concern when exporting to US, EU and Japanese markets. Although Malaysia is in the same region as China, accessing its market is not easily done as China has stringent measures pertaining to quantity reduction and quality restrictions.

However, Malaysian exporters tend to fare well in the ASEAN market as the only NTM effect type faced is price effects. It is heartening to note, from the findings, that quantity reduction and quality restrictions are not significantly related in the ASEAN market which implies that harmonisation of standards' requirements in the region is progressing well to promote trade among its member countries.

CHAPTER 7 :

STRATEGIC RESPONSES OF EXPORTERS TO NON-TARIFF MEASURES

7.1 INTRODUCTION

This chapter starts with an overview of Malaysia exports and response strategy conceptual framework discussion. This is followed by an analysis on the country's exporters response option without time dimension, response options with time dimension, response option by firm type and firm size and ownership.

In discussing the role of NTMs on exports, studies on action or response pursued by exporters when faced with NTMs are limited. It is widely known through a plethora of studies that NTMs undoubtedly impede trade. Especially in the Malaysian case study, little is known on how its exporters would respond upon facing NTMs in its export markets. Do they exit, stay-put or voice out? This study sheds some light on this research area.

Data is collected through survey and interviews to understand the response position that Malaysian export firms tend to pursue when they face NTMs in export markets. As discussed in earlier chapters, NTMs often hamper trade flow and export firms from developing countries are usually adversely affected. Beyond this point, a few studies highlight the response strategies adopted by a variety of firms. It is not exactly known what responses these firms undertake, especially in the case of exporters from developing countries.

7.2 MALAYSIAN EXPORTS

A declining growth trend was recorded for Malaysia's exports in three main sectors from 2014 - May 2015. As can be seen in figure 7.1 below, the three main sectors are manufacturing, mining and agricultural exports which are clearly declining. Though the performance of the manufacturing sector has been generally encouraging with positive growth in GDP and exports, its share in the world market is weakening. This is due to stiff competition from emerging economies such as China, India and Vietnam. Another possible reason could be the effect of NTMs which is widely noted to impede exports. Numerous studies on NTMs have given evidence through their findings and discussions that NTMs are mostly detrimental to developing countries.

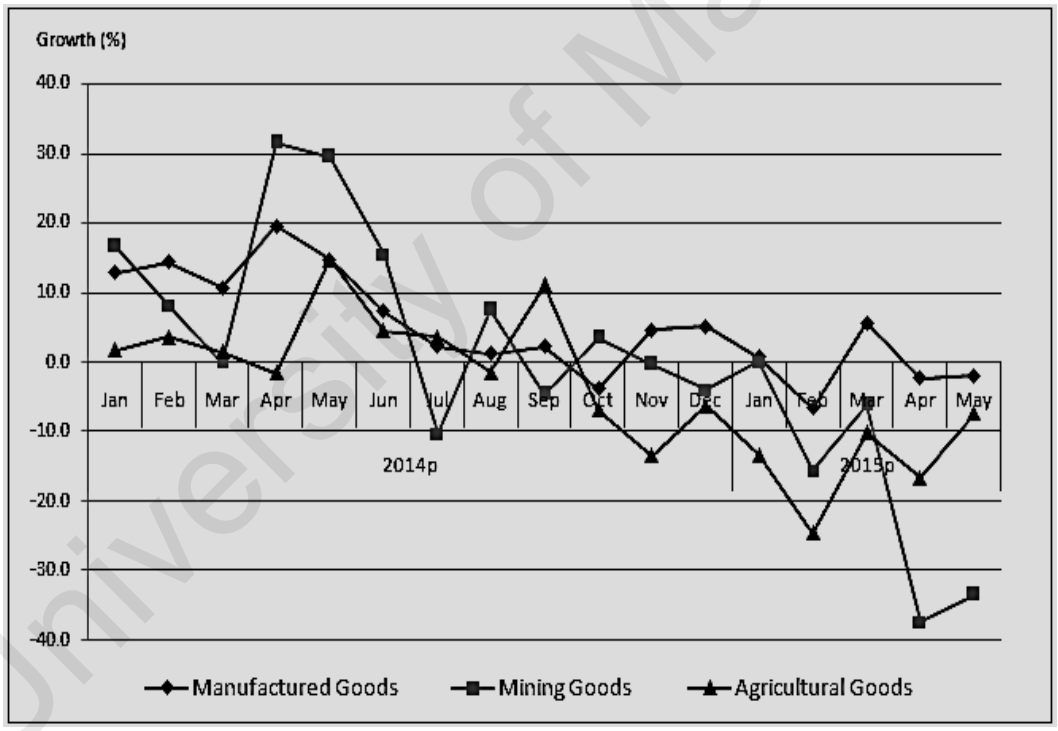

Figure 7.1: Export Growth Trend for Malaysia's Main Sectors 2014-May 2015
Source: Department of Statistics, Malaysia
Compiled by MATRADE

The findings concur with others on the effect of NTMs on trade flow. As reported in chapter 6, Malaysian exporters in the '25 percent and less', '26-50 percent' and '51-75 percent' export groups are most likely to perceive NTMs to be stringent compared to the reference group used which is 'more than 75 percent'. This could explain why these three

export groups are exporting at their current levels. Exporters exporting more than 75 percent do not perceive NTMs as stringent. Small and medium sized firms in this study generally perceive NTMs as stringent compared to large sized firms. Resource-based firms mostly perceive NTMs as stringent. If this is matched with the growth trend in Figure 7.1, one of the conclusion that can be derived from this is that perceived stringency of NTMs does adversely affect exports. Malaysia's share in world trade has declined by 0.3 percentage over the last decade. Though the decline is marginal, it has received national attention as manufactured goods dominate total exports at 82 percent (MITI, 2015) which is a large portion from the overall export market.

However, the responses taken by exporters when faced with NTMs are largely unknown, especially in the case of Malaysian exporters. Additionally, there is a dearth of primary firm level data available for undertaking research on NTMs, particularly for Malaysia. Henson and Jaffee (2008) noted that stringent standards on agricultural product exports caused exporters from developing countries to deeply think about competitive repositioning. In light of this development, this study provides firm level evidence on the response strategies taken by Malaysian exporters when faced with NTMs in export markets. The findings can serve as an input to national stakeholders in ensuring that assistance is targeted to the specific group of exporters that face compliance issues.

7.3 MALAYSIAN EXPORTERS' STRATEGIC RESPONSE

The firms that took part in the survey were asked to provide their response on the 'exit', 'loyal' and 'voice' options when they faced NTMs where compliance is a requirement to their exports. Table 7.1 summarizes the findings.

Table 7.1: Response Option by Export Levels

Response Options	Export Level (in percent)			
	'25 percent and less'	'26-50 percent'	'51-75 percent'	'> 75 percent'
	(in percent)			
Exit	20	12	5	0
Loyalty	80	88	95	100
Voice	30	22	15	5

Notes: Numbers for response strategies are in percentage and are based on 143 export firms that responded to the survey.

As reported in Table 7.1, about 20 percent of Malaysian exporters that export 25 percent and less of the total output tend to exit a market that imposes NTMs which they are unable to comply with. Firms in this export level group complain about NTMs the most. This is followed by 12 percent of firms in the '26-50 percent' export level. Large sized export firms (exports with more than 75 percent) do not exit an export market at all. They choose to pursue loyalty strategic response option. About 75 percent opt for loyalty response strategy in a reactive manner, while the others do it proactively. They sustain their export performance in the markets that they export.

These findings concur with Schlegelmilch and Crook (1988) where they noted that high export intensities tend to be cost effective (lower total costs due to economies of scale) and avoid trade restricting measures imposed by governments in the export markets.

Table 7.2: Response Option (with time dimension) by Export Levels (percent)

Response Option	Export Level (in percent)			
	'25 percent and less'	'26-50 percent'	'51-75 percent'	'> 75 percent'
	(in percent)			
Exit-Reactive	18	11	4	0
Exit-Proactive	2	1	1	0
Loyalty-Reactive	60	78	88	75
Loyalty-Proactive	20	10	7	25
Voice-Reactive	24	17	11	4
Voice-Proactive	6	5	4	1

Notes: Numbers for response strategies are in percentage and are based on 143 export firms that responded to the survey. Only 'exit' and 'loyalty' are mutually exclusive, and therefore the four indicative responses across both options total 100 percent within the groups with differing export levels.

Table 7.2 provides details on the strategic response options along with time dimension. The reactive time dimension occurs the most among the strategic response options. It is noted that firms in the '25 percent and less' export level group pursue the exit strategy the most and it is done so in a reactive manner. Through the interviews, it was further seen that the form of 'exit' for less-export intensive firms involved switching customers, that is diverting their exports of the specific affected segments to other markets.

However, it is important to note that the 'exit' option in itself can be a costly choice for exporters (Gelbach, 2006). Due to this, this particular group of exporters mostly chose the parallel strategy of 'voice'. However, the reactive approach sought by most exporters reflects the culture of 'stonewalling' until the threats become 'real' (Henson and Jaffee, 2008).

Most of the firms in the '26-50 percent' and '51-75 percent' export level groups pursue loyalty response in a reactive manner. This concurs with Henson and Jaffee's findings on Kenyan and Indian firms where all the firms appear to exit a market in a reactive manner. The reactive manner is obvious in other strategic options too i.e. 'Loyalty' and 'Voice'. It can be seen that most firms in all export levels groups are loyal in a reactive manner.

Table 7.3: Response Option (with time dimension) by Export Level and Firm Type

Response Option	Export Level and Firm Type (in percent)							
	'25 percent and less'		'26-50 percent'		'51-75 percent'		'> 75 percent'	
	(in percent)							
	RB	NRB	RB	NRB	RB	NRB	RB	NRB
Exit-Reactive	17	1	9	1	3	1	0	0
Exit-Proactive	1	1	1	0	1	0	0	0
Loyalty-Reactive	56	4	76	2	86	2	72	3
Loyalty-Proactive	16	4	7	3	5	2	19	6
Voice-Reactive	21	3	16	1	9	2	3	1
Voice-Proactive	5	1	4	1	3	1	1	0

Notes: Numbers for response strategies are in percentage and are based on 143 export firms that responded to the survey. Only 'exit' and 'loyalty' are mutually exclusive, and therefore the four indicative responses across both options total 100 percent within the groups with differing export levels. RB - resource-based; and NRB - non-resource –based.

Table 7.3 shows that resource-based firms actively pursue all the response strategies. As can be seen, resource-based firms in all export level groups, mostly pursue loyalty response strategy in a reactive manner. Resource-based firms are also the ones which pursue the exit strategy and voice strategy in a reactive manner the most. These firms export products that are natural resource-based such as timber, furniture, agricultural, food, palm oil, petroleum, petro-chemicals etc.

As reported by OECD (2005), firms from ASEAN countries face NTMs mainly in the forms of TBT, sanitary regulation, quotas, packaging, labelling, technical standards, labour and environmental standards and testing an inspection. Baller (2007) in his firm level study, found TMs (SPS, TBT and PSI) as main barriers imposed on exporters. Exporters from developing countries could incur high costs in complying with NTMs. Jakubiak et al., (2006) and Wilson and Otsuki (2004) found that 3.85 percent of production costs was spent on compliance and the average cost of customs clearance was 6.95 percent of total export value.

Melitz (2003) argued that due to high fixed costs, firms decide not to enter a market. This could result in trade diversion. Unnevehr and Hirschhorn (2000) and Wilson and Abiola (2003) added that stringent food safety standards is a cause of concern for exporters from developing countries. Lack of emphasis on the importance on NTMs especially the SPS and TBT measures can put exporters in an unfavourable position with regards to the domestic competitive markets of importing countries. Through the interviews, it is found that resource-based firms, especially exporters who are engaged in food business, attributed their reactive mode to information asymmetry in food trade. Most of these firms are small in firm size, thereby being in the position of recipient of information which clearly shows that they are not in a capacity to internally generate information (Fairman and Yapp, 2004).

Table 7.4 shows findings on the response options pursued by firm export levels and firm size. It is noted that small sized firms tend to be mostly fall in the category of pursuing a strategic response option. Findings show that 15 percent of small sized firms in the '25 percent and less' exit in a reactive manner while 9 percent exit in a reactive manner in the 26-50 percent export level group. These findings concur with Majocchi et al.(2005) and Williams (2011), who found that firm size is positively related to export performance.

Table 7.4: Response Option (with time dimension) by Firm Size

Response Option	Export Levels and Firm Size (in percent)											
	'25 percent and less'			'26-50 percent'			'51-75 percent'			'> 75 percent'		
	(in percent)											
	S	M	L	S	M	L	S	M	L	S	M	L
Exit-Reactive	15	2	1	9	1	0	3	1	0	0	0	0
Exit-Proactive	1	1	0	1	0	0	1	0	0	0	0	0
Loyalty-Reactive	50	5	5	62	10	6	76	6	6	62	7	6
Loyalty-Proactive	5	10	5	1	5	4	2	2	3	10	10	5
Voice-Reactive	17	5	2	14	2	1	8	3	0	3	1	0
Voice-Proactive	4	1	1	3	1	1	3	1	0	1	0	0

Notes: Numbers for response strategies are in percentage and are based on 143 export firms that responded to the survey. Only 'exit' and 'loyalty' are mutually exclusive, and therefore the four indicative responses across both options total 100 percent within the groups with differing export levels. S – small size; M – medium-size; and L-large size.

Small sized firms in all export level groups pursue the loyalty and voice strategies in a reactive manner the most, compared to medium and large firms. High cost of compliance could be a reason for this occurrence. Granslandt and Markusen (2000) pointed out that the incompatible standards do not favour exporters of small firms as their costs of compliance could be substantial. Through interviews conducted with some of the firm exporters, it has come to light that small sized firms accept the fact that high cost of compliance is a major impediment to their exports.

Table 7.5 shows the response options analysed by export level and firm ownership. Findings in the table show Malaysian-owned export firms seem to comply with the NTMs and actively do business in the export markets. Most of these firms pursue

loyalty response option, though in a reactive manner. Foreign owned firms that are highly export-oriented (with export level of more than 75 percent), have positioned themselves to comply with NTMs. Consequently, foreign-owned firms are less engaged in the voice strategy relative to local-owned firms, as they have no complaints on the NTMs imposed in global markets.

In interviews with foreign owned firms, it was relayed that compliance with specifically public (state-centred) NTMs, is no longer an issue with them as their focus has shifted towards global-firm based standards in response to globalised production systems. Furthermore, they are able to generate strategic information that aids them to prepare and manage the NTMs imposed. However, 'exit' response strategy is noted among Malaysian firms in the '25 percent and less' export level. This is consistent with other analysis where firms in this group generally exit the most.

Table 7.5: Response Option (with time dimension) by Export Level and Firm Ownership

Response option	Export Level and Firm Ownership (in percent)							
	'25 percent and less'		'26-50 percent'		'51-75 percent'		'> 75 percent'	
	(in percent)							
	M	F	M	F	M	F	M	F
Exit-Reactive	18	0	9	1	3	1	0	0
Exit-Proactive	1	1	1	1	1	0	0	0
Loyalty-Reactive	55	5	76	4	85	3	81	3
Loyalty-Proactive	15	5	6	2	5	2	7	9
Voice-Reactive	27	3	16	1	10	1	3	1
Voice-Proactive	5	1	4	1	4	0	1	0

Notes: Numbers for response strategies are in percentage and are based on 143 export firms that responded to the survey. Only 'exit' and 'loyalty' are mutually exclusive, and therefore the four indicative responses across both options total 100 percent within the groups of differing export levels. M – Malaysian, and F – Foreign.

In discussing the ownership structure and export performance, Graner and Isaksson (2009) found that foreign owned companies established in developing countries tend to be more efficient in their exports than domestic-owned firms. The authors reasoned that this could be because of greater experience in management and superior organisational structure. The handling of NTMs was not specifically discussed, but it can

be argued that the reasons given above could contribute to efficient management of the measures imposed on them in the export markets.

Fung et al. (2008) found that foreign firms with cost-leadership advantages in China, tend to export and have a higher level of export intensity. Berry (1992) noted that foreign owned firms in many developing countries have the advantage of proprietary information and access to marketing networks in export markets. It is important for such firms to be generally foreign-trade oriented as they are able to manage the NTMs effectively as opposed to their counterparts.

Table 7.6 presents findings on the response options pursued by firm export levels and firm age. Firms with less than 5 years in operation pursue the loyalty option in a reactive manner across all export levels. These young firms, exit and voice their concerns the most too.

Table 7.6: Response Option (with time dimension), by Export Level and Firm Age

Response Option	Export Levels and Firm Age (in percent)											
	'25 percent and less'			'26-50 percent'			'51-75 percent'			'> 75 percent'		
	(in percent)											
	<5	5-10	>10	<5	5-10	>10	<5	5-10	>10	<5	5-10	>10
Exit-Reactive	17	1	0	9	1	0	4	0	0	0	0	0
Exit-Proactive	1	1	0	2	0	0	1	0	0	0	0	0
Loyalty-Reactive	42	8	10	70	4	4	72	8	8	84	3	1
Loyalty-Proactive	2	15	3	1	3	6	2	2	3	2	4	6
Voice-Reactive	17	7	3	16	1	3	11	2	1	3	1	0
Voice-Proactive	1	1	2	0	1	1	1	0	0	1	0	0

Notes: Numbers for response strategies are in percentage and are based on 143 export firms that responded to the survey. Only 'exit' and 'loyalty' are mutually exclusive, and therefore the four indicative responses across both options total 100 percent within the groups of differing export levels. Firm age refers to years in operation.

The established firms (more than 10 years in operation), pursue the loyalty option proactively and as do firms which are mostly in the 'more than 75 percent' export level group. It is understood that such an option is pursued as they export large quantities to the markets that are highly regulated.

These firms therefore take on the proactive mode to compliance, fully understanding that there would be cost reductions and higher sales through optimised input/technological change. This in in line with the resource-based view that says older firms have a strong, international foundation because they generally are equipped with larger stocks of resources than younger firms. According to Williams (2011), this implies that the greater the firm age, the more learning and knowledge will happen.

7.4 SUMMARY OF THE FINDINGS

The results show a clear pattern in the level, firm size, and type of firm pursuing strategic response options when faced with NTMs. With regard to pursuing 'exit' as a strategic response action, it is obvious that firms that export 25 percent and less are the most compared to firms in higher levels of exports. Resource-based and small sized firms are most actively involved in pursuing strategic response actions. Malaysian-owned export firms tend to exit the most especially among the firms in the '25 percent and less' export group level. In terms of firm age (years of operation), firms who have been in operation for less than 5 years tend to face challenges in handling NTMs in export markets, which leads some of the firms, especially those that have lower export intensity, to exit the market concerned. Established firms (more than 10 years in operation) across all export levels, are more entrenched in the international markets, as they have the capability and capacity to withstand and manage NTMs. This study's findings contribute in an important way to assist policy-makers develop and implement policies and programmes to enhance export performance of the affected exporters.

CHAPTER 8 : CONCLUSION AND POLICY IMPLICATIONS

8.1 OVERVIEW OF STUDY

This study set out to examine the impact of NTMs on Malaysian exporters. The importance of understanding the impact to the exporters in Malaysia is crucial in the wake of the country's increasing integration into world trade through exports. This is proven by studying the export trade in 2015 which grew by 1.9 percent despite ~~the~~ challenging economic environment, leading to an astounding achievement of RM779.95 billion (MITI, 2015). This makes Malaysia a highly export-oriented developing country. Moreover, the importance of this study cannot be more significant and appropriate amidst the current materialisation of the RCEP trade pact, of which Malaysia is one of the 16 countries participating.

It must be noted that the NTMs studied include those which are classified and not classified under UNCTAD. The non-UNCTAD classified measures included in this study are PMs, ONTMs and information asymmetry; and an analysis on effect of NTM types. This study has sought to address the following research questions;

i. Do NTMs impede or enchance exports from Malaysia?
ii. How stringent are NTMs and TMs relative to other measures for Malaysian exporters by export intensity and export destinations?
iii. What are the NTM types (price effects, quantity reduction, quality restrictions, and threat of retaliation decision) faced by Malaysian exporters?
iv. How have NTMs affected the response strategies (exit, loyal or express concern (voice) of Malaysian exporters?

The above research questions are addressed with the following research objectives;

i. To empirically examine the overall effects of NTMs on Malaysian exports.

ii. To empirically examine the stringency of NTMs and TMs on exports by export intensity and major export destinations.

iii. To determine the NTM types (price effects, quantity reduction, quality restrictions and threat of retaliation) faced by Malaysian exporters.

iv. To assess the response strategies of Malaysian exporters in facing NTMs.

Findings that answered the research questions were derived using two data sets. The primary data was from the survey of 143 export firms and the secondary data was obtained from the TRAINS database. Apart from these, the gravity model and multinomial logistic regression analysis techniques were used as well. Key findings that answered the 5 research questions are discussed below.

The discussion below addresses the research questions on whether NTMs enhance or impede exports and the stringency of NTMs. The findings of this study, through the gravity analysis technique, show that NTMs have mixed effect on exports from Malaysia. NTMs enhance exports for Malaysian exporters to ASEAN and Japanese markets. However, they do not facilitate exports to EU. While the gravity analysis of the TRAINS data does not provide specific details on the nature of export firms, the firm level survey from the 143 export firms do. The findings that indicate that NTMs impede exports to EU is reinforced by the survey findings which provide more specific details about the affected firms.

Firms with export levels below 75 percent seemed to find exports to EU as stringent. Similar results were gathered for exports to the US. Interestingly, NTMs were

found to enhance exports to ASEAN and Japan through the gravity analysis. This is further supported by the survey findings but these findings were only confined to firms with export levels of more than 50 percent to ASEAN and firms with export levels of more than 50 percent to Japan. Resource-based export firms (of which agricultural products are part of) suffer the impact of NTMs as compared to non-resource-based export firms. This could be the result of stringent TMs such SPS and TBT imposed by importing countries, especially EU. As noted by Rau et al., (2010), the harmonization of standards across the EU member countries is likely to be a constraint for exporters especially from developing countries.

Generally, it concurs that whenever NTMs are implicated, firstly, in the rise of costs of exports and secondly, in the rise through production and delivery, exports are affected or impeded (Francois, et al., 2011). However, in the case of experienced companies that are better prepared especially with higher export intensity (more than 50 percent), NTMs are less likely to affect exports as shown in the survey findings. Small and medium-sized export firms are affected by NTMs compared to larger-sized firms. The findings on firm sizes concur with Anders and Caswell (2009) where small size firms are affected by NTMs because of high compliance costs.

The research question on the effect of TMs on Malaysian exporters is addressed in the following discussion. The survey findings show that the TMs which are a concern for Malaysian exporters comprise TBT, SPS and pre-shipment and CPs. This is in line with Fugazza (2013) where TMs, especially TBT and SPS pose a concern for export firms in developing countries. However, this study found that export firms with a higher export intensity (more than 75 percent) find TMs not stringent. This is perhaps these firms are aware of the importance in complying with NTMs to export their sizeable quantity and they are backed with strong resources. The US, EU and Japan seem to be active in

implementing TMs. Malaysian exporters especially with the export level of less than 75 percent face lengthy and cumbersome CPs. especially those exporting below 75 percent.

Additionally, this study also dealt with the effects of PMs and ONTMs. It seems lower export intensity firms (with less than 50 percent) are affected by ONTMs such as language barrier, not having an office site, and a bias or preference provided to own country's firms by government in export countries. Apart from this, these firms found the Japanese market stringent due to language barrier. This can be found in the analysis of the results of the firms that were interviewed where, language seems to be an important concern for them in their exports to Japan.

Findings on PMs show similar impact results i.e. firms exporting less than 75 percent find the measures to be stringent. The US, E, and Japan seem to be fertile ground for PMs. PMs require exporters to certify their products. One of it is the ISO certification which is identified as one of the drivers for exporters in developing countries be internationally recognised (Montiel and Husted (2009) and Blackman and Guerrero (2012). This could be the case for Malaysian firms exporting less than 75 percent which find PMs such as the need to acquire the ISO certification as stringent.

An interesting observation from the findings relates to the pattern of exports to the ASEAN market which Malaysia is a member of. Contrary to the expectation that member countries can freely export among them, this study's findings reveals otherwise. Malaysian exporters with less export intensity (export level below 50 percent) face stringency of NTMs in the ASEAN market. This could be the case where Cadot et al. (2013) pointed out that the ASEAN region still suffers from lack of information on NTMs as they are not transparent. Unavailability of information on NTMs even to a member country causes constraints in effectively penetrating the trade market of the region. Information asymmetry is another variable examined against the export levels in this study. It is significantly related to three export level groups – '25 percent and less', '26-

50 percent' and '51-75 percent'. It can be concluded that export level of these firms may be affected by information asymmetry. The exporters find information asymmetry for their exports to the US and EU. However, exporters in the '25 percent and less', '26-50 percent' groups find information asymmetry in Japan and China markets.

The research question on the NTM types faced by Malaysian exporters is addressed in the following discussion. Three NTM types faced by Malaysian exporters which are price effects, quantity reduction and quality restrictions have been noted to be significantly related to the stringency of NTMs. Malaysian exporters face price effects, quantity reduction and quality restrictions in their exports to the US, EU and Japanese markets, compared to threat of retaliation. So, it can be said that Malaysian exporters are probably not in the antidumping exercise especially in the US, EU and Japan. The exporters, however, do face price effects in the ASEAN market which is their own trade region.

On response options (exit, loyal and voice) pursued by Malaysian exporters, it can be concluded that firms that have low export intensity, particularly those exporting 25 percent and less, tend to exit markets. They do it in a reactive manner. Most firms across all export levels pursue loyalty response strategy in a reactive manner. In voicing out concerns about NTMs, firms in lower export intensity (exports of less than 50 percent) do this in a reactive manner. Firms that have high export intensity (export more than 75 percent), do not pursue exit strategy as their response option when faced with NTMs. From the findings, it can be concluded that resource-based firms, small size firms and young firms (less than 5 years in operation) pursue the exit strategy in a market or markets. These firms actively pursue the other two options as well, where most of them take the loyalty response strategy in a reactive manner. Finally, it can be concluded that Malaysian-owned firms, especially those which have low export intensity (below 50

percent) exit trade markets the most. This answers the research question on response strategies pursued by Malaysian exporters.

The control variables that were used are firm type, firm ownership, firm age and firm size. Overall, the major conclusion is that resourced-based firms are mostly affected by stringency of NTMs compared to non-resource-based firms. Firm ownership seems to bear no significance against export levels. For firm age, overall it is does not bear significance for Malaysian exporters. It can be concluded that firm ownership and firm age (years of operation) do not affect Malaysian exporters' effort to go international. Small and medium sized firms seem to be affected the most by the stringency of NTMs.

8.2 POLICY IMPLICATIONS

The findings of the study have important implications related to guiding the policy debate on NTMs. Firstly, small and medium size resource-based firms, with less exposure to international trade, should be the target group of policymakers to provide assistance in complying with global standards and regulations. Secondly, TM, such as CPs and formalities as well as TBTs should be given priority by the relevant stakeholders in streamlining and harmonising these measures to conform to global standards and regulations. Thirdly, PMs, particularly for resource-based firms, should also be factored in the negotiations with trade partners at the outset, to facilitate trade. Lastly, the implementation status of the harmonisation procedures at the regional level should be given sufficient attention by policymakers, as this will provide the platform to benchmark regional standards with global requirements.

With regards to the findings on the response options taken by Malaysian exporters, first there is a need for capacity building in all firms to enable them to maximise the scope of strategic options through the 'proactive' approach. A 'proactive' approach will enable exporters to minimise negative consequences/spill-overs of NTMs to their firms. As

Henson and Jaffee (2008) pointed out, acting proactively through 'loyalty' provides great scope and flexibility to test and apply alternative production technologies, employ and adopt varied administrative resources and build the necessary infrastructure needed. Potential first mover advantages could also be derived by proactive firms with the aforementioned sunk costs borne earlier than their competitors. Similarly, firms that 'exit' in a proactive manner may avoid unnecessary costs associated with sunk investment and other transactions. Next, there is a need to further address the most negative approach, which is the combination of 'exit' and 'reactive' measure taken by the affected exporters, namely to help these category of firms from incurring losses and improving market access (that is not to be excluded from highly regulated markets).

Given that the small size and younger firms from the exporting group of 50 percent and below are completely reliant on external information, many of them have attributed to information asymmetry as the key reason for their export behaviour. Many exporters in this group are not aware of some of the new measures that prevail in the developed markets and the extent of stringency of those measures. This also explains their active engagement in the 'voice', though again reactive. Hence, policy makers should identify this targeted group of exporters to ensure that they receive updated information on the measures and requirements in major markets.

The 11th Malaysian Plan has earmarked the Department of Standards Malaysia to increase collaboration with manufacturers to identify international standards to be applied by them (EPU, 2015). This is a step in the right direction to ensure better flow of information between policymakers and businesses (and industry associations). Finally, there is a need to engage more exporters to exhibit the 'voice' strategy, as only a small proportion of the exporters seem to factor this option as a parallel strategy in their choices. More importantly, there should be active participation of exporters that choose the 'exit' strategy, as their discontent gives more scope to 'voice'. The 'voice' strategy is indeed

the defining link between exporters and policymakers to ensure that the needs of the former are taken up at government-to-government level or by the government through international institutions such as WTO.

8.3 STUDY LIMITATIONS AND FUTURE RESEARCH

As in any research, this study has limitations as well. The coverage ratio approach has limitations in that it does not give any direct information about the effects of NTMs. Broad coverage of NTMs does not mean higher trade distortion level. The endogeneity issue also is a drawback for the coverage ratio method. It is possible to rectify this issue with weights fixed at trade levels. The use of disaggregated data is important to show commodity –wise effects. Trade policies often have commodity specific economic effects. Policy evaluation is better done at micro-level using disaggregated data than at macro-level using aggregated data. Whole analysis with aggregated data would potentially result in aggregation biasness (Anderson and Yotov, 2010). However, analysis using disaggregation data requires resolving the prevalence of zero-trade issues. A number of estimation methods can be used to overcome these problems. These methods include Poisson Pseudo Maximum Likelihood (PPML), zero-inflated Poisson Pseudo Maximum Likelihood (ZIPPML) and Poisson Quasi-Likelihood (PQL). Burger et al.,(2009) and Staub and Winkelmann (2013) suggest the use of ZIPPML and PQL as most appropriate estimate methods with excessive zeroes trade values and dispersion.

This gravity model in explaining trade flows is not without criticism on its theoretical limitations and econometric problems (Armstrong 2007). One of the criticisms of this model is that it omits unobserved trade resistant variables which results in a violation of the assumption of a normally distributed random disturbance, leading to an estimation bias (Kalirajan and Findlay 2005). Plummer et al. (2010), points to another weakness presented by the specification and measurement error. (Plummer et al., 2010).

To further elucidate, Nasir and Kalirajan (2016) noted that the omission of relative economic distancepce term in the empirical specification of the gravity model leads to biased estimates. Kalirajan (2007) added that this would result in heteroskedastic error terms which when the empirical model is log-linearized with its presence, it leads to inconsistent estimates.

Given the limitations of the conventional gravity model, future research should use the stochastic frontier gravity model which is better utilized in explaining the variations in exports realistically. For this, the works of Kalirajan (2007) is important. According to Kalirajan (2007), the stochastic frontier gravity model is a better approach to explain trade flows and trade potentials in a realistic manner because unapparent institutional characteristics and other unobservable variables are not omitted. The author also stresses that the stochastic frontier gravity model can explain the variations in exports of the focus country by capturing the influence of natural determinants, behind the border determinants, mutually induced determinants and the explicit beyond the border determinants.

Das and Bhattacharya (2009) agree with Kalirajan and provide similar advantages on the usage of the stochastic frontier gravity model. Firstly, the stochastic frontier gravity model does not suffer from a loss of estimation efficiency unlike in the case of OLS estimation. Secondly, the model can measure the effects of export constraints in the home country (exporting country) or 'behind the border' constraints and the model is able to do this in isolation from 'beyond the border' constraints and the statistical error term. This feature of the model, where it is able to isolate the effect of 'behind the border' constraints is crucial for policy makers in giving an idea as to the extent these constraints have on potential exports. Finally, the model is able to provide trade estimates that are more realistic (potential trade estimates closer to frictionless trade estimates).

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LIST OF PUBLICATIONS AND PAPERS PRESENTED

Published

1. Sithamaparam, A. and Devadason, E.S. (2016). "Do Non-Tariff Measures in the EU, Japan and the ASEAN Matter for Export Consignments from Malaysia?" Institutions and Economies, 8(2), 1-25. (SCOPUS).
2. Sithamaparam, A., Devadason, E.S. and Chenayah, S. "Stringency of Non-Tariff Measures in Partner Countries: Perceptions of Malaysian Exporters" accepted for publications in Malaysian Journal of Economic Studies, 54, (1),1-20. (SCOPUS).

Under Review

3. Sithamaparam, A., Devadason, E.S. and Chenayah, S. "Strategic Responses by Exporter to Non-Tariff Measures: Firm-Level Evidence from Malaysia" submitted to Singapore Economic Review on 4/2/2016.

Paper Presented

4. Presented paper at the 36th Federation od ASEAN Economic Association (FAEA) Conference 24-25 November 2011, Kuala Lumpur Malaysia.

"Do Non-tariff Measures in the EU, Japan and the ASEAN Matter for the Export Consignments from Malaysia"